

FLOPPY DISKS
maxell
— Datalife —
— MEMOREX —
For credit card orders please
or end user enquiries
Tel DISKING (0428) 722563

Computer Weekly

Thursday, April 21, 1983

Big German user suspends Fujitsu

by Kevin Cahill
THE biggest German user of Fujitsu's machines has been forced to suspend their use until summer. Germany's largest bureau, Datev, despite declaring the Fujitsu OS-IV operating system more reliable than the IBM MVS, will not bring its Fujitsu mainframes back online until June.

Fujitsu machines under OS/IV in parallel with the two IBM machines running MVS. The four machines access a data pool of 170 gigabytes which is continuously online and which is based on 48 IBM 3380s as well as 60 Siemens 3550 discs. Because of the size of the data pool and the need for real time access 24 hours a day by 15,000 of Datev's 25,000 terminals, Datev gradually developed a dual vendor policy which the company felt was essential if it was to be secure from any shortcomings which might develop as a result of relying on one vendor.

The second vendor chosen by Datev's chief executive Heinz Seibiger, was Fujitsu, in the disguise of Siemens. Seibiger insisted that full dual vendor benefits would only accrue if the second vendor had its own operating system. In the event Fujitsu was able to show true independence as well as compatibility.



SEIBIGER... Puzzled by IBM's reaction.

Logica buys out Australians

LOGICA has bought out the Australian operation of its erstwhile backer, Planning Research Corporation. The deal means the formation of Australia's third largest systems house, according to Logica chairman Philip Hughes.

And the takeover of PRC's four bases, at Sydney, Brisbane, Melbourne and Canberra gives Logica the geographical spread necessary to service effectively the Australian market, says Hughes.

Hunt for buyer

IO TECHNOLOGY was still looking for a buyer last week, after calling in the receiver, Phil Ramsbottom, of accountants P.M. Marwick and Mitchell, who took charge of the UK micro maker's business, said 70 sales memoranda had been issued to parties interested in taking it over. He hoped to sell it as a going concern. The firm went public last year, raising £500,000 to launch its last model, but was thwarted by production problems.

Jermyn sold

LEX Service, the exclusive UK dealer for Volvo cars, has bought Jermyn Holdings, an electronic components distributor, for £15.3 million. Jermyn is in the top five UK distributors with a profit of £1.17 million in 1982. It is the sixth largest company in the field in West Germany and operates in France. Lex already owns Schweizer Electronics, a leading US group, and Hewlett, a small UK distributor. It is intended that electronics distribution should account for 25% of Lex's turnover of £700 million this year.

Work starts on cabling standards

by John Kavanagh
THE government has started work on communications standards for the proposed cabling of the UK — a month before Home Secretary William Whitelaw is due to present the White Paper to the Commons.

The Department of Industry has contracted the UK communications firm Network Technology to lead a study on the standards needed to link cable television services, local area networks and public data networks. British Telecom, ICL and Thorn EMI are also involved.

This group will look at the possibility of linking cable television networks run by Thorn EMI in Swindon and British Telecom in Milton Keynes. British Telecom's X25 packet switching network and high-speed Megastream and Kilostream digital services will be considered for this link.

But the study is also going much further. The group will look at standards needed to upgrade the cable television networks to include data communications, using the broadband local area network which Network Technology sells in the UK for the US manufacturer Sytek. And it will study standards involved in linking ICL baseband local area networks into the cable system.

The result of this latest industry-led study could be a pilot project linking domestic and business users in Swindon and Milton Keynes.

The pilot project could become a testing ground for things which are only on paper at present, said Dick Willson, who is leading the project from Network Technology. Willson added that the local area network market had moved beyond last year's arguments over whether broadband or baseband systems were better. "We're no

Hitachi three to launch new range

by Kevin Cahill
THREE of the world's largest computer vendors, including two top European companies will shortly introduce Hitachi's new mainframe products to the marketplace. The machines, announced recently in Tokyo, and intended to complete Hitachi's line-up against IBM's top end machines in the 3081 range, will be launched in Europe by Olivetti shortly, and were included in BASF's line-up at Hannover Fair.

National Advanced Systems, which is US-based and the largest seller of Hitachi systems, will introduce the machines either later this month or early next month according to Bob Howells, NAS European vice-president.

Howells said the only reason for the delay in the NAS introduction was that it did not release systems until it could ship and support them.

IBM's basic offering in the 308X series is a liquid-cooled classic (dual) processor called the 3081, with letters K, D and G and a MIPS rating of 4 to 6.

The Hitachi M280 range now offers an improved 280H to compete directly with the 3081K. The M280H has expanded buffer



HOWELLS... "NAS does not release systems until it can ship and support them."

a quadriplicator to compete with the 3084, and looks unlikely to do so in the near future.

This marks a slight departure from the usual Japanese practice of almost slavishly matching IBM announcements machine for machine, and is probably related to the low sales forecasts made for quadriplicators in the current generation of machines.

HITACHI continues to demonstrate the desk-top laser printer introduced by ICL at the Slob show in Paris last September. The machine is still, according to Fujitsu executives, on offer to OEM dealers, and so far the company has signed no deal with ICL. Part of the reason, according to the Fujitsu staff, is because the machine, which is a combined laser printer, copier and facsimile machine, has no controller board. Without the board the device is simply an expensive office copier, unusable for any of the communications applications for which it was designed. Finding a company capable and willing to create a controller is proving more difficult than either Fujitsu as supplier, or ICL as vendor, had first thought.

LINE NOISE

IT looks as if ICL's 500-strong Applications Systems Division could be due for the axe only 18 months after its rise from the ashes of Datakit, with rumours of consultants being made redundant as their projects come to an end. ASD was once the apple of managing director Robb Wilmot's eye, but one City analyst says that it is no longer seen by Wilmot as the spearhead he once thought it was, and that ICL will rely more heavily on outside systems houses. "Wilmot's ideas aren't as fixed as they used to be," he adds. Sources within ICL believe that a reorganisation and change of direction is very much on the cards for both development and marketing areas, but an ICL spokesman denied any plans to scrap ASD.

IBM's basic offering in the 308X series is a liquid-cooled classic (dual) processor called the 3081, with letters K, D and G and a MIPS rating of 4 to 6. The Hitachi M280 range now offers an improved 280H to compete directly with the 3081K. The M280H has expanded buffer

PT7 cuts costs
Ferranti Computer Systems



Alvey response is due

by Kevin Cahill
THE government's response to the Alvey Report is due today in the form of a ministerial statement in the Commons.

It is expected to take the form of a partial adoption of the less expensive elements of Alvey's proposed £350 million of expenditure on information technology over the next five years, including a much smaller directorate than Alvey recommended.

The Alvey Committee was set up by the Department of Industry in response to the challenge of the Japanese Fifth Generation Computing project.

One recommendation is that the government should fund up to 50% of specific projects despite the government's dislike of state funding. The second recommendation is that the Alvey funded projects, which will be targeted on Software Engineering, VLSI, Knowledge Based Engineering, and the man machine interface, should be controlled by a large directorate. Again, this is contrary to Mrs Thatcher's avowed policy of reducing, and not increasing, the number of civil servants.

Software brings the micro dream closer

by George Black
THE promise of microcomputers bold for large data processing departments and their end-users is a step closer to fruition with a rash of announcements by leading software firms.

Cullinet, Informatics, Management Science America (MSA) and McCormack and Dodge have all laid the groundwork for linking personal computers and mainframes.

The initial emphasis is on tying IBM mainframes to IBM's personal computer, which has already gained 40% of the US market. IBM will do much of the connecting work, making the micro act as a terminal.

But the more intractable problem lies in developing software to allow the PC its own intelligence when joined to a mainframe. With that breakthrough the burden of systems waiting to be written might be shifted to end-users.

Cullinet revealed its plans last week to launch a package by the year end. Its IDMS/R will overcome the problem of having to choose between a relational database benefiting users and a network approach maximising on power, says international operations director John Karcanes.

With it is bundled the new Cullinet Information Database, which it is proposed to interface with Apple's Lisa machine — and a set of business applications. Delivery here and in the US will be in the fourth quarter, assures UK managing director Vic Morris. "We've made such a fuss about it we can't afford to slip up," he said.

Informatics is combining with Videcorp to promote what it insists will be the first general-purpose link of the machines. Target for release is also the fourth quarter. European marketing director Doug Yarrow argued that they had not included uploading in the system because of a "very big customer reluctance to allow this for control and security reasons". A 50-micro group would cost \$45,000.

The pace was set by MSA in December, when it stated its intention to use a hardware device to bridge the gap. MSA, with its micro subsidiary Peachtree, hopes to put its "Executive Peachpak" on the market in July or August.

Available in the US since January, it has been demonstrated recently to customers in Maidenhead. Consultant Andrew Bailey said there had been a delay in finding a suitable British firm to make and support the black box protocol converter. It was still "a little premature" to talk about prices.

McCormack and Dodge has scheduled the introduction to the US of its software offering as a "springtime event", and hopes to bring it to this country "some time this year", according to Charles Hogan, European regional manager. A 50-micro configuration could cost as much as \$150,000, he said, but M&D's approach was "more sophisticated than its rivals", allowing uploading of data as well as downloading.

Cincom is investigating ways of putting its fourth generation language Mantis on to the PC. The

project which has top priority at its Cincinnati laboratories should be finished this year. It will be followed by a project to put the database system Total on the PC, says UK general manager Terry Booth. Applied Data Research is poised

to make an announcement in this area in the next two months. UK director Nick Pollard said that downloading and uploading of files was not the best answer — they wanted to create "a dynamic interaction" between the machines.



MORRIS... "We can't afford to slip up."

Micro Focus shares go on USM

MICRO FOCUS, the award-winning British micro Cobol firm, is to offer 20 per cent of its shares on the Unlisted Securities Market in the first half of May. And it is more likely they will be offered for sale to the public by advertisement than placed in advance, a spokesman said.

The issue, which will be carried out by stockbrokers Laurence Prust with advice from merchant bank Singer and Friedlander, is expected to raise £3.5 million, at least half of which will be ploughed back into the business. Total value of all the firm's shares on the opening day is estimated between £15 million and £17 million.

HP double

THE first of Hewlett-Packard's 14in Winchester discs comes off the production line today (Thursday) — the same day that the first seed is cut for its new factory near Bristol. The 65.6 Mbyte 7912 discs are being built in temporary premises until the new plant is completed early next year. The new factory at Wallcourt Farm will concentrate on the design and manufacture of mass storage devices, and will form the sole European source for HP storage products.

Purchasing policy

A RENEWED call for a clear government procurement policy on electronics has come from the National Economic Development Office. In an update of a report published a year ago the electronics committee acknowledges positive government moves on many of its points but re-affirms that a public procurement policy is vital to an industry in which employment is falling and imports are fast overtaking exports.

It's Oscar time again for the British

by George Black
THE British are coming again to claim their share of Oscars at the industry gala night at the Savoy Hotel, London, tomorrow night (Friday).

But flag-waving at the ICP Million Dollar Awards ceremony is likely to be subdued, for some of the home firms have passed into American hands. And many British successes rested on US products.

The all-Brit Micro Focus will be picking up a \$5 million award for its Level 11 Cobol, as well as mil-

lion-in-one-year awards for salesmen Stewart Lang and Chris Wilson.

And Manchester-based Northern Software Consultants' Nor-sal2 sales ledger package made the million-in-one category, with its Nor-ma general ledger and management reporting system passing the one-million mark.

The ghost of recently-crashed Altergo will be there to take the honours for its Friendly Query System, which also achieved the million-in-one.

In the banking sector BIS Soft-

ware is rewarded for its Midas product. And two firms which used to be British in that sector, Hoskyns and Arbat, continue to triumph under US ownership. Systems, a chunk of which went into American hands with Control Data, is to take three awards.

Package Programs Ltd, the London accounting package company, is to get awards for sales of the US Cyborg payroll system and of Software International's general ledger and financial reporting and accounts payable and receivable systems.

F International's Janet Lennon is one of the few women to gain recognition for her accomplishments as the group's western regional manager.

Filetab Support Services' rapid programming language is one of those to pass the million dollar mark — as is Lex-11, from Ace Microsystems with which Filetab has, ironically, been locked in legal dispute.

Bristol-based RTZ Computer Services passed the \$50 million mark with its US-developed general ledger system G/L Plus.

Wilkes Computing For DEC Terminals

New Low Prices
VT101 VT131 VT100 VT102
LA12 LA100 LA50
(available soon)
Call now for fast and efficient service

© Registered trade mark Digital Equipment Co. Ltd.

Wilkes Computing
Bush House, 72 Pance Street, Bristol BS1 4HU
Tel. (0272) 277399 Telex 449205

RAPPORT
The proven Relational Database System for VAX and PRIME and over 88 other mainframe and mini computers.

RAPPORT is the proven system because —

- It is used at more than 120 installations worldwide
- It has been used commercially for three years
- It is used for both small and large databases
- It is used in business, industry, government and research
- Applications include computer aided design, stock control, time sheet analysis, financial management, project management, personnel administration, literary referencing, scientific data analysis and many more.

RAPPORT can be used by Fortran, Cobol or Coral application programs or by using its own powerful Interactive Query language for report formatting, data acceptance and update, and answering ad hoc queries.

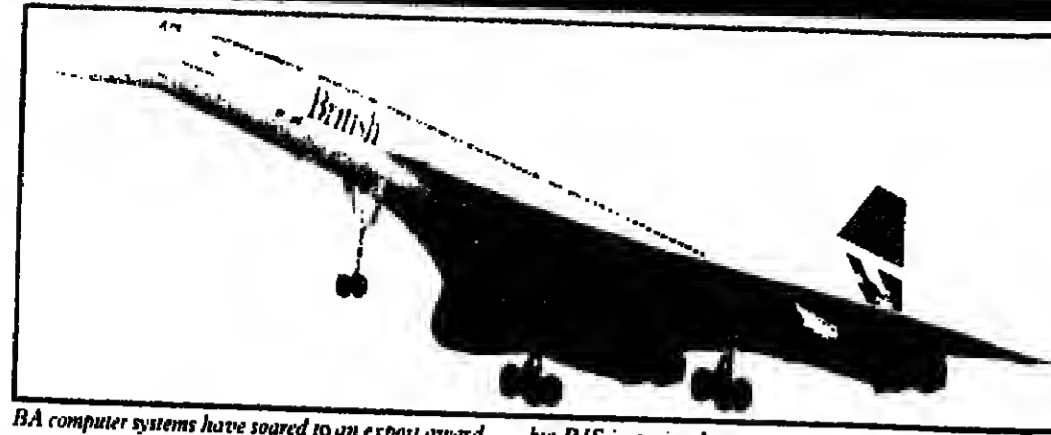
RAPPORT gives the power of traditional database systems with the benefits of the new Relational approach to data management — an essential aid to application development

For more information or a demonstration please contact
Frances Scott
Database Products Group
Logica Limited, 84 Newmarket Street
London W1A 4BS
Telephone 01-837 9111

logica
*VAX is a trademark of Digital Equipment Corporation

Company News	9
Software File	10
Micro News	11
Profile, Platform	12
Leaders, Letters	13
Workplace	14
People	15
Compe Europe	
Preview	17/20
Coding	21
Future Trends	22
Artificial Intelligence	23
Products	24/25
Crossword Answer	54
Top Jobs	29
Middle East Jobs	46
Jobs	28/55

Lynton's Euro call on Compe eve... 17
Psychology and computers... 23
BBC star slams the micro... 8



BA computer systems have soared to an export award... but BIS just missed out.

BIS banking exports take off

by Philip Hunter
BIS Software almost doubled export sales of its banking systems to £7.6 million last year, but still failed to pick up a Queen's Award for Export Achievement. The company has taken the award for the last two years, and in 1982 it also won the Institute of Marketing's Annual Award.
"I guess it's disappointing we didn't win a third Queen's Award with exports up 81%," admits disappointed marketing manager Sam Smith.
BIS figures were as good as some of the companies that did win awards, Smith claims. But unlike the others, the improvement was not dramatic.
Overall sales of BIS Software were up 68% for the year ending 1982, and orders expected to be fulfilled this year top £10 million, £2 million of which were taken in February alone. Profits will not be announced until results of the whole group come out in June.
BIS Software's main product is a suite of banking programs called Midas, which run on IBM's System 34 and System 38. These dominate the international banking systems market.
The key to export success of Midas is the ability of the package to be adapted for local requirements and to cope with particular idiosyncrasies of particular foreign banks.
The company was nearly caught out when adapting the package for the Japanese, since bank interest there is added on both the first and last days of the month, rather than just one or the other as in most Western countries.
BIS has just announced a new module for Australia to deal with pledged securities which banks use to avoid paying too much tax. The company is also developing programs to handle the financial futures market in London.

Apple wants dealers' details

by Howard Karten and Robert Parry
APPLE Computer recently notified its US dealers that from June 1 those who wish to remain Apple dealers will be required to submit detailed information to Apple regarding their sales strategies, advertising efforts, and other facets of their operations.
The information Apple requires includes the retailer's sales strategies for each Apple product family, physical description of each retail sales outlet, personnel descriptions including organisational charts, compensation plan, and performance review plans, and advertising and promotion budgets.
Meanwhile in the UK, Apple has been going through its dealer list and putting things on a more formal basis.
"We spent some time learning from our colleagues in Europe and the US," says UK managing director Peter Cobb, "then invited a very large percentage of our existing dealers to sign new contracts." Around a tenth elected not to sign, he adds.
"We have always taken the position that selling a microcomputer needs professionalism," Cobb says. "It's not just selling pounds of cheese - you need good initial advice as well as continuing after sales support."
Observers in the US cite several reasons for Apple's move. First, in recent months Apple has taken several steps to tighten up or eliminate the so-called grey market, that is Apple products bought in large quantities (and therefore at significant discounts) and then resold to mail-order houses, who then sell at prices below those of full-service Apple dealers.
In addition, Apple is believed to be trying to protect itself from dealers who are currently on shaky ground. One such dealer recently entered bankruptcy, owing Apple about \$1.6 million.
Several Apple dealers contacted had not yet received their notification from Apple. One large Boston-area dealer, Sherman Howe, when informed of the provisions in the letter, applauded.
"I work very closely with Apple," said Howe, whose company last year did around \$6 million in business with Apple, mostly selling to corporations. "I provide a lot of this information to them as a matter of course. I see nothing wrong with Apple's move because it seems to make a lot of sense," he said.

BA exports please the Queen

by Andrew Thomas
NINE companies were singled out for information technology efforts in this year's Queen's Awards, announced last week. Logica VTS won for its VTS 2200 word processing package, and the BBC and IBA shared an award for teletext development.
Rediffusion scored with its flight simulation system WIDE, and Quantel won its second prize for technological achievement for its digital production effects system which manipulates live television pictures in real time.
Audio Kinetics was rewarded for microprocessor-based machine control equipment, Dabit for telecommunications components, STC Submarine Systems for underwater cables, and Metier for its project management system Artemis.
British Airways won a second Queen's Award for its computer system, just six months after being voted Airline of the Year by business travellers. The award for

Plexus says no to \$1 million

by Andrew Thomas
CALIFORNIA-based supermicro maker Plexus has secured a further \$6 million of venture capital, bringing its total in three years to \$12 million.
And, according to company president Bill Jobe, the offer of an additional \$1 million was rejected because Plexus doesn't need the cash.
"We'd rather keep the number of shares down," says Jobe, "so we can meet our target of \$1 a share. All we would have done with the money was to put it somewhere we would have got interest on it."
Each of the company's seven investors in the two previous cash injections increased their investment in Plexus, including London-based financiers Abingworth. Five other US concerns contributed to the \$6 million. The extra million was offered by a second consortium wanting to take a stake in Plexus.
One area in which Jobe sees the money being used is that of business graphics.
"Colour business graphics is the big hole in our line. It's going to be next year's big thing," he says.
Plexus' new products for this year were announced last week: a Unix-based network operating system, NOS, and a link between Plexus 16 and 32 bit supermicros and IBM mainframes.
NOS is an Ethernet system which Plexus claims allows the for-



JOBE... Turned down million.

SALES BRIEF Imperial is first to get big Cyber

THE first UK order for Control Data's Cyber 170/855 big mainframe has come from London University's Imperial College. The 170/855 was launched a year ago as a direct rival to IBM's 3081.
Imperial College is a long-standing Control Data user. The 170/855, valued at £1.5 million, will replace a 170/720 and run alongside a Cyber 174.
The two machines will share disc files and peripherals and will serve about 600 terminals and microcomputers around the college, in other universities and in secondary schools.
They will also link into a London University network, communicate directly with processors at the main university computing centre and at the Science and Engineering Research Council's Rutherford Laboratory and hook into the national university network, which is based on the X25 packet switching protocols.

Portuguese power

UK CONTROL systems maker Westinghouse has netted a £3 million contract from Portugal for equipment to control the national electricity power supply. The system is based on two DEC Vax computers, and will consist of a national centre in Lisbon with four regional control centres and a data transmission network.

Scientific Scots

COMPUTER Technology, the UK's leading rival to Tandem in the market for fault-tolerant hardware, has won its first scientific order from Scotland. The Forth Valley Health Board has ordered a CTL 8066 computer with Momentum memory option, together with the company's Phoenix laboratory system, for use in the haematology and biochemistry departments.

Traffic contract

FERRANTI has developed a new way of collecting traffic information for the British government in a £2½ million contract. Outstations supplied by sub-contractor Golden River Company will gather information from sensors embedded in the road and pass it over the public telephone network to Ferranti Argus 700 computers.

Thunder system

CAP is supplying the meteorological office with £200,000 worth of computer equipment to help track Europe's thunderstorms. The scientific group of the company will build a real time system round a Perkin-Elmer minicomputer to analyse data received from unnamed stations that detect the flashes of lightning.

Leasco database

DATA General has made one of the first UK sales of its MV1000 computers to Leasco Software of Maidenhead, Berkshire. Leasco will use the computer to build an online database system as part of a £1.4 million contract with the US insurance company, Commonwealth Land Title Insurance Company of Philadelphia.

Process control

PRESTCOLD, one of the Suter group, has invested £220,000 in a manufacturing control system designed by UK control software specialist Conserv. The control system will be used to help make compressors and condensing units for refrigerators.

\$20m contract

US MAKER of small business systems AES has beaten Wang and Four Phase to a \$20 million contract to kit out US lawyers with word and information processing equipment. Attorneys offices across the US will be given a total of 123 AES Multiplex systems for applications including scheduling of court cases.

CP/M is now tuned in to C

by George Black
DIGITAL Research is to start delivering C-language versions of its popular CP/M operating systems this week.
Author of the C-compiler, Michael Lehman, assured a software vendors' forum in London that C would get the "utmost care and attention."
"Virtually all our future developments will be in C," he said. Lehman, who was also the author of the industry standard Pascal/INT compiler, spent some time outlining the virtues of C over those of Pascal to the 450 guests at the forum.
The first C-based version, which is claimed to have the advantage of greater portability and compactness over its Assembler fore-runner, is designed for the Intel 8086 chip machines.
CP/M-68K - the version designed for the Motorola 68000 chip machines - is bundled with the 8086 version, but Digital says this is not a full implementation. Lehman's complete 68000 implementation may be available by August.
He told the conference: "C is a sportier language. It is not something you would give your grandmother to drive on a Sunday afternoon."



LEHMAN... "C is not for grandmothers on a Sunday afternoon."

A new support system for independent software vendors is being introduced by Digital, which says it is now recognised that their needs differ from those of the ordinary end-user.

Lehman said he saw the industry moving in the direction of "layman languages", such as Logo.
They would be getting a lot of attention.

The \$600 C-package described at the one-day conference includes a native code compiler, assembler, programming and debugging aids, library editor, Unix-compatible library, linker and documentation.

Schools and colleges are given a Prime cut

by John Riley
US MINI maker Prime last week announced a £4 million scheme to give schools and colleges half-price systems.

There are three separate programmes. The first, the Educational Support Programme, is to allocate £2 million to give small educational institutions, including schools, a 50% reduction on complete systems based around a Prime 2250 minicomputer. The only stipulation is that they are used for teaching purposes.

About 100 systems, comprising a Prime 2250 with 1 Mbyte memory and 68 Mbytes disc storage, two VDUs, a serial printer and £12,000 worth of Prime software, are offered for £20,000 each as a first-come first-served basis. The remaining £2 million is for



McMULLAN... committed.

Gale Aguilar, Prime's vice-president, systems marketing, commented: "We are now 10 years old, and have just entered the Fortune 500 top US companies. We are now in a position to make more long range investment."

Prime has four distinct targets, affirmed McMullan. "These are information technology and office automation; distributed data processing and information management, CAD/CAM; and education and research," he said.

Electronic document delivery is on the way

by George Black
PROJECT Hermes - an electronic document delivery service planned by the Industry Department - looks as though it could now get off the ground.

Over 150 organisations which received the Department's mailshot have said they would like to take part.

The main users of the service are likely to be librarians. Possible providers of information for the telex scheme include the BBC Monitoring Service's summary of world broadcasts, Elsevier International's bulletins, Keating's Contemporary Archives, London Business School's management journals, McGraw Hill's publications listings and Sweet & Maxwell's legal journals. Data from various government bodies and li-

braries is also likely to be provided.
It is intended that Hermes users will be able to communicate by electronic mail with other system users. British Telecom is to provide a directory of UK subscribers from January 1984. Technical details are being worked out by BP's systems subsidiary Seicon.
Last month Under Secretary John Butcher announced that it had appointed five companies - Ferranti, Plessey, Mitel, STC and GEC - as authorised telex suppliers.
Hermes users will get 50% off the cost of equipment if they buy from these, with the government injecting a total of up to £4 million by March 1984. The service will run over the public phone network and BT's packet switched service.

OD moves from Data General to Texas

by Robert Parry
A SYSTEMS house specialising in minicomputer applications in manufacturing industry, OD Systems, has turned away from Data General for its low entry-level offerings. Rather than move down the DG range from the MV machines its Mancos system is implemented on OS Systems has plumped for the Texas Instruments business systems.

"We looked at - and implemented - Mancos on the low end Data General CS machines," says sales director John Tattershall, "but they were nothing like as good as the TI minis."

The main attraction was the software compatibility throughout the range that comes from running anything from the single-user System 200 up to multi-user System 800s under the same IIX10 operating system.

"The Mancos suite of software is itself modular, so customers can extend the system to fit new needs, and the TI kit gives a similar easy expansion path."

"Traditionally with manufacturing systems there has been a gap between mainframes or large minis and microcomputers," says OD managing director Philip Palslow.

"Now Mancos on TI kit fills that gap with small to medium minis. Large systems, with expensive licences of software which are expensive to install and manage are at an end."

The smallest single-user system starts off at just below £9,000, but would only include one aspect of the Mancos suite. For a starter system bringing in the three main aspects - the manufacturing database and inventory control, accounting ledgers, and invoicing - a company would really need to spend around £20,000 for a multi-user System 300 and software modules, says Tattershall.

OD Systems' aim is to encompass shop floor automation and CAD work in the same company-wide computer system.

CICS TRAINING

For programmers
CICS APPLICATION PROGRAMMING
CICS DLI APPLICATION PROGRAMMING

For analysts and designers
CICS APPLICATION DESIGN
DESIGNING AN IMS/OLI DATABASE
DESIGNING AN IDS DATABASE

For operations staff
CICS FOR OPERATIONS STAFF

For management and new users
CICS APPRECIATION FOR MANAGEMENT

All courses taught by practicing consultants

All prices exclusive of VAT which will be added at the current rate

CICS application programming 3 days £215 22.05.83, 11.07.83, 12.08.83, 24.10.83, 06.12.83

CICS DLI application programming 5 days £405 22.05.83, 11.07.83, 12.08.83, 24.10.83, 06.12.83

CICS application design 4 days £400 27.06.83, 06.08.83, 31.10.83, 12.12.83

Designing an IMS/OLI database 5 days £500 26.04.83, 18.07.83, 10.10.83

Designing an IDS database 5 days £500 06.06.83, 27.08.83, 19.08.83, 28.11.83

CICS for operations staff 2 days £195 20.04.83, 19.06.83, 24.11.83

CICS appreciation for management 2 days £210 13.06.83

C.A.C.I.

database and TP specialists

Should you wish to reserve a place or enquire about our public courses or in-house training please call Karen Gentleman or Gavin Whichello on 01-405 8233

If you want traditional values we have the technology

Not quite as sophisticated as your BSA, Range, and Rover, but none the less, the very latest equipment to restore your car professionally.

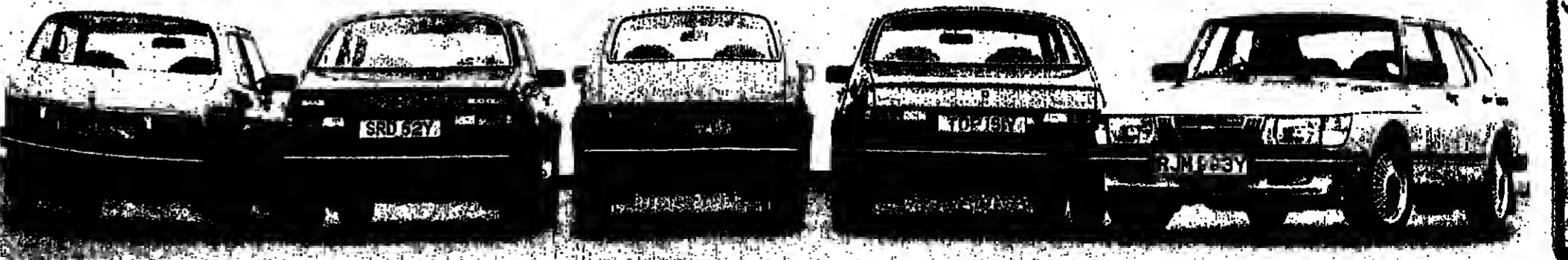
We are a VERA full member and approved by B1. Haulage and many leading car clubs.

We work on four hundred hours a year, so if you want to drive a beautiful car, whether it's a Mini Cooper or a Range Rover, contact David Galsworthy.

The Abingdon Classic Car Company Ltd. Telephone Oxford (0865) 730991 Telex 299365 Unit 2, Abbey Industrial Estate, Wotton, Abingdon on Thames, OX12 8LQ. OPEN: Mon-Fri 9.30 - 5.30 Reception: Sat 9.30 - 1pm

Exactly the same is true of Saabs. Between the 99 GL at £5950 and the five-door Turbo at almost £12,000, there's as much difference as between a promising young executive and a Managing Director.
And yet, in many fundamental respects, all Saabs are identical.
Perhaps it's to do with being Swedish, with driving conditions as arduous as any in the world, a car manufacturer who tried to cut corners on his less expensive models wouldn't survive a single winter.
To your company, that means all Saabs are built to keep their residual value: the British climate holds no terrors at all for their tough, anti-corrosion treated bodywork.
All Saabs can help your workforce keep their grip when others are losing theirs in rally after rally. Saabs have proved that, for road-holding in less than ideal conditions, front-wheel drive is no less than a necessity.
And all Saabs put your drivers' safety first: they'll go about your business protected by a rigid steel passenger cage and reassured by Saab innovations like a reinforced inner-ceilings and a heavily padded knee-guard under the fascia.
Perhaps these down to earth, practical virtues are simply what you'd expect of Saabs, but their combination of performance and economy may well surprise you. To take just one example, the GLi, second only to the 122 mph Turbo in performance, returns an economical, financial director-pleasing 38.6 mpg.

"EVERYONE IN THIS COMPANY IS EQUAL. BUT SOME ARE MORE EQUAL THAN OTHERS."



The Saab 900 GLi illustrated costs £8,110. The Saab 9-door Turbo illustrated costs £11,995. The limited edition CD Turbo Saloon costs £14,995. Prices correct at time of going to press and include Car Tax and VAT. Road Fund Licence. Delivery Charges. Number Plates and optional paint are extra. The Official Fuel Consumption figures for the 4-door 900 GLi illustrated are as follows: Simulated Urban Cycle - 21.9 mpg (12.9 L/100 km), constant 58 mph - 38.8 mpg (17.3 L/100 km), constant 75 mph - 29.6 mpg (9.6 L/100 km). The Saab Executive Car Plan is available subject to qualification. Source of performance figures Saab Scania AB Saab (UK) Limited, Saab House, Feltham Lane, Marlow, Bucks SL7 4JY. Telephone (0628 64) 6677.

French take personal approach to end users

by Jack Gee
CAP GEMINI SOGETI, the French software service company, has launched a European programme to train sales staff to negotiate with end users in companies which are installing big batteries of personal computers.

Chris Ugander, president of its Europe group, said in Paris: "It is still too early to say how microcomputers will affect our business. But the purchase by individual firms of hundreds or even thousands of personal computers tied to local networks could have a big impact."

The GCS European chief added: "Personal computers will speed up the process of putting computers into the hands of end users. Data processing managers will lose much of their power."

Explaining why his company is retaining sales personnel for this new situation Ugander said: "We can no longer talk our own DP people because 55% of our sales managers report that end users are the key people who take the decisions nowadays. We want to make sure our sales staff change their approach and grab the new opportunities."

CAP Gemini Sogeti, which has subsidiaries in nine European countries, is now looking for



DREYFUS... "We will probably try to acquire a medium-size company."

openings in Italy and Austria.

Vice-chairman Philippe Dreyfus said: "Italy is one of our priorities. We will probably try to acquire a medium-size company rather than start from scratch. There is no question of going after the bigger existing firms such as Italtel or Olivetti's subsidiary Sintax."

Underlining the role of end users and the opportunities which their increasing predominance offer to CAP Gemini Sogeti, Dreyfus said: "In the US today 85% of Cabot programs were written 20 years ago. It could take another 20 years to rewrite them in the new computer languages. More and more of our competitors are leaving the tailor-made software business. This is our big chance."

Ugander said that in spite of the increasing emphasis on micro-based systems, CAP Gemini Sogeti would not depart from its traditional marketing policy.

"We are driven by the needs of the market, not by technique. We don't try to build Concorde and achieve technical success which cannot be sold," Ugander emphasised.

He added: "We look at local requirements and build our operations around these. That is why we have just set up an office in Stavanger, the Norwegian oil centre — because the number of computers installed there is increasing in a spectacular manner."

Dec means business with Vax

by Philip Hunter
THERE are now more commercial than scientific users for Digital Equipment's powerful Vax minicomputer family. And Decus, the DEC user group, has at last recognised the commercial side of the Vax by forming a Vax commercial users' group, which will meet for the first time in May.

DEC has just announced a powerful terminal database system for the Vax and is developing a relational database. But Steve Riley, of Decus, says the significant moves were the implementation last year of the Codasyl database system and also of the international standard version of Cobol, the world's leading commercial systems language.

Meanwhile third party software houses have muscled in on the Vax with software for order processing, invoicing and payroll. Software Sciences, part of the Thorn EMI group, has transported its Opra order processing and stock control system from DEC's PDP-11 minis to the Vax.

The Vax version costs £15,000 and offers the user split second response times, and the ability to include an almost unlimited number of products. "Opra is probably the first complete distribution system to take advantage of the Vax," says Software Sciences sales director David Packwood.

Package Programs has developed a payroll system for the Vax, and commercial software is also available from Xerox, BL Systems and Allen Computers. Decus member Arrick Wilkinson says that it should not normally be difficult for software houses to convert software written for the PDP-11 to the Vax. Programs for the PDP-11, which has only 64K central memory, had to be carefully written to save space.

To convert programs written in Cobol from the PDP-11 to the Vax, it is necessary only to recompile the individual code segments, and then remove the complex linkages needed to make the package run on the PDP-11.

Safety code call for chip controlled processes

by John Riley
MORE accidents will occur with the proliferation of increasingly complex chip-controlled industrial processes unless a code of safety practice is agreed, says a report published last week.

It points out that although microprocessor-controlled systems, for example in robotics, offer considerable benefits in terms of productivity and quality, there are inherent safety problems. Unconventional precautions have to be taken as electronic failure modes are complex and not always predictable, the devices are susceptible to electrical interference, and latent software errors may cause dangerous situations.

These problems are being examined by the Health and Safety Executive. It is drawing up a code of practice which will provide advice on safety, environmental and operating considerations. The safety aspect will emphasise programming considerations, backup systems and emergency shutdown systems, and reliable software. The environmental considerations will deal with problems caused by electrical interference and fire protection, and guidelines will be laid for operating and maintenance.

*Manufacturing and Service Industries. Health and Safety 1981. Her Majesty's Stationery Office, 1983. £6.50.

Home shopping and banking may be worth \$30bn by 1995

by Nuala Moran

THE provision of computerised services such as shopping and banking from the home will become a \$30 billion business in the US by 1995. This is the conclusion of a two-year study of the consumer attitudes of 700 families conducted by Booz Allen and Hamilton, an international management and technology consulting company.

Of those surveyed 60% say they would buy basic services for \$15 a month, 75% said they would use home banking and bill-paying services, 70% said they would use

home security services and 50% said they would use video games.

Hans Schwimann, a vice-president of Booz Allen, says the market for these services will grow rapidly from 1986 onwards, much sooner than industry experts have predicted.

"With the timetable for introducing such systems to the market so close at hand, the stakes for a variety of industry participants are huge," Schwimann adds. Opportunities will exist for European manufacturers of consumer electronics to have a share in a £10 billion market, he says.

COMPUTASTARS

They're off!...in the 1983 DP Olympics



Sponsored by Computer Weekly.

by Andrew Thomas
OUT with the liniment and elastic bandages — Computastars '83 starts on Saturday.

Birmingham's Alexander Stadium sees the inaugural meeting of this year's DP Olympics, when European champions Kalamazoo put up no fewer than four teams in defence of their title.

Kalamazoo will be looking to avenge their fourth place in the Jingle '83 John O'Groats to Land's End relay held over Easter, when they were beaten by the gallant Computastars team, which finished third after Barclays Bank and Rowntree Macintosh.

Jingle '83 raised between £30,000 and £40,000 for charity, and well over half the entrants were Computastars athletes. Some individuals were heard to remark that the run was good practice for Computastars itself.

Alongside the four Kalamazoo teams will be three from Grand Metropolitan Hotels. Scottish Widows are back too, with two contenders for the Andrew Thomas award for pretty silly names. The Jockstraps is predictable enough, but the veterans' team name deserves a special award for tortuousness — The MacThuesel.

A signed photograph of my bad self will soon land on the doormat of Horizon, whose two teams certainly deserve all they get with the men calling themselves Horizon Shines, and the women Horizontelles.

The British Telecom Memorial Award for the highest number of telephone calls to secure an entry goes to the British Shoe Corporation which managed a staggering 12 calls before its entry was finalised.

And one of last year's teams showing commendable forward thinking is Compower, which is waiting until next year when they'll be old enough to enter the veterans' competition. Clever this!

A full report on the Birmingham heat and the 23 male, five female, two small units and two veteran teams involved will appear in the May 12 edition of Computer Weekly. Watch this space.



Women's rugby? It must be Computastars.

Birmingham line-up

Meeting starts 11.00

GROUP 1
Kalamazoo A
Grand Metropolitan 1
Open University
Pisana (Pisana Drug Squad)
BL Systems A
Sandvik (Sandvik DP Gumbies)

Kalamazoo C
Scottish Widows (Jockstraps)
Computer Systems & Products

GROUP 2
Grand Metropolitan 2
Kalamazoo B
Horizon 1 (Horizon Shines)
British Rail Board
VAG UK
British Shoe Corporation

GROUP 4
Grand Metropolitan 3
British Shoe Corporation
Fleischers Computer Services
Horizon 2
Bristol & West Building Society
Scottish Widows (MacThuesel)

GROUP 3
BL Systems B
Probe Data Systems

GROUP 5 WOMEN
Kalamazoo
Open University
Sheffield Insulating
Horizon (Horizontelles)
Bess Computer Services (Bess Special)

A NEW STAR SHEDS LIGHT ON THE BUSINESS WORLD.

And it's IBM-PC compatible

Introducing Hyperion — the world's most powerful portable computer.

Weighing in at less than 20lbs. The new star which makes other personal business computers seem small-minded. Or heavy footed. The petite Hyperion is biggest in performance, with 256kb memory (four times what most competitors offer). Truly, for the first time, a

whole business can be carried in a small case.

Naturally, the Hyperion is IBM-PC compatible — and it's cheaper. It also runs the MSDOS and BOS operating systems —

so you can interchange disks and data. And it offers an extra the IBM doesn't — a RAM disk. Unlike other portables, the Hyperion displays star quality

on a large seven inch screen — with crisp, clear presentation. And it looks the part — so stylish, yet unobtrusive on the desk. The Hyperion. What it takes to be a star.

For more information just fill in the coupon below and send to Gulfstream Technology Limited Unit 3A, Tunnel Estate, 726 London Rd, West Thurrock, Grays, Essex RM16 1LS. Telephone: (04026) 4926. Telex: 894222 Gulfs

Hyperion

the world's most powerful portable computer

GULFSTREAM TECHNOLOGY LIMITED Unit 3A, Tunnel Estate, 726 London Road, West Thurrock, Grays, Essex RM16 1LS. Telephone: 04026 4926

Please send me full colour brochure of the Hyperion Portable Computer ☐

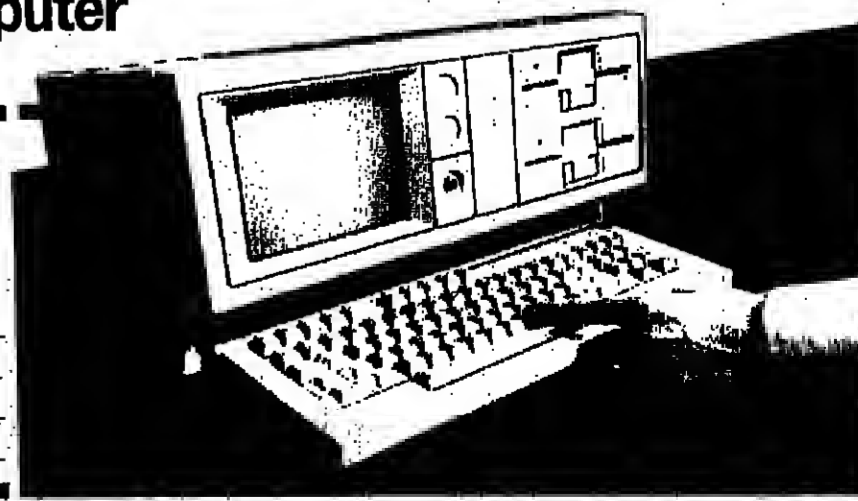
Please send me details of how to become a Hyperion Portable Computer Dealer ☐

My name is: John Riley

Company:

Address:

Telephone: CW 21483



Want To Reach People Who Buy Software? — With no wastage? Then Software is the answer

Software is the first and only regular UK-based journal covering this important field. It has a precisely-built circulation of 20,000 software decision-makers — the people who purchase, specify or influence the specification of software and software services. And it is backed by the editorial and publishing skills of Computer Weekly. For more details and a free copy of the latest software market and media information book contact: Gordon Bradley on 01-881 8126. Software Electrical Electronic Press, Quadrant House, The Quadrant, Station, Surrey, SM5 2AS



Terminals shopping

Take a look at the package.

THIS PACKAGE CONTAINS:
- Complete range of terminal terminals
- All fully tested
- All delivered off the shelf
- 30 days after warranty
- Supported by the terminals experts

BBC presenter slams the micro

by Kevin Cahill
THE BBC's prophet of a new future with microcomputers, Ian McNaught-Davis, has let slip that "the whole thing is a disaster".

McNaught-Davis, managing director of Camsure and presenter of the BBC microcomputer programme, told the London branch of the British Computer Society last week that "everything went wrong every time."

Most of the programme makers were there from morning to night trying to get the micros to perform the most elementary tasks, he said, with "the only micro that worked the one you saw".

McNaught-Davis said that we'd all been hyped into believing that the micro would solve every business problem.

"It couldn't, and for every prob-

lem the micro solved it created another," he said.

His sharpest comments were reserved for the term "user friendly", or "easy to use".

"You should translate this," McNaught-Davis said, "as very hard to use, but easier to use than the extremely hard to use micro that preceded the so-called friendly one you were looking at."

"We had been led to believe that the micro was something for nothing," McNaught-Davis continued, "but it isn't."

"There are a lot of very clever people around in the industry and they don't come free," he said.

"Imagine," McNaught-Davis continued, "people come into me and buy a £50 piece of software and ask for the training to be thrown in free."

"They don't walk into a car

showroom, select a car and then expect driving lessons to be thrown in free."

Moving from the hardware and software end of the micro industry directly, McNaught-Davis described most micro manuals as creations akin to the Bible.

"If you started at Genesis and read to the end its bloody hard to work out the code unless someone explains it to you."

And if the manuals are not as thick as the Bible, they tend to be useless, he noted. By way of putting a very small candle in the very dark tunnel he had created, McNaught-Davis said that he had never seen so much money being spent: "Literally hundreds of millions of dollars in the US, to solve the problem. It will get cracked," he concluded, "within five years."



MCNAUGHT-DAVIS... "Everything went wrong, every time."

Ex-Plessey men sell Plessey peripherals

by Nuala Moran
THREE Plessey managers have split away from the firm to set up as UK distributor for Plessey Peripherals Systems (PPS).

Mike Brisland, ex-managing director of PPS, and sales managers Duncan Hilton and James Adamson formed Centrose to sell the DEC-compatible kit after failing to find a suitable distributor while they were working for Plessey.

"There is nothing sinister about the setting up of a separate company," said Brisland. "This is a very competitive market where generally prices are falling and PPS needed to find a new means of supporting sales."

"Suitable sales personnel are difficult to find and command high salaries. It therefore became logical for PPS to have a distributor base."

As there was no suitable distributor, Brisland's ambition to set up on his own led to the formation of Centrose.

Initially, Centrose will only sell PPS products. It will then move on

to sell other companies' products which do not compete in the same sector of the market.

"This is an area where between us we have 40 years' experience and we are confident that we can do justice to Plessey's products," said Brisland.

And Gerard Mottier, vice-president international sales of PPS, said: "Plessey jumped at the opportunity of getting people who are familiar with the market and know the products to sell for us."

Plessey's sales people will now concentrate on the OEM market. The Centrose distributorship will be exclusive and PPS will continue to provide technical and software support in the field on its products.

Centrose will take over PPS's existing end user customer base and is setting up a computerised database linking the customers to their interests. There are three offices in Northampton, Manchester and Ascot and Centrose intends to open three more in Bristol, the North East and Scotland.

by Donald Kennett
STANDARDS have been proposed for handling photographic and geometric images on videotex (videotext) systems and terminals. They have been developed by working groups in CEPT, the Conference of European Postal and Telecommunications Administrations, which publishes standards for Europe.

Documentation of the proposals is being prepared for inclusion in a revision of the 1981 European standard for alphanumeric (text and simple block graphics) videotex systems which is to be presented to CCITT (the International Telegraph and Telephone Consultative Committee) - which sets worldwide standards for telecommunications - in September.

Preliminary drafts were presented earlier this month at a seminar in London held by British Telecom Research Laboratories consultancy staff. BT staff also described work in various European countries on links between national videotex services - with different schemes for compatible and incompatible systems.

The CEPT working groups are keeping in touch with as much other standards work as possible.

Graham Hudson, the UK delegate to two of the groups, said that for the addition of photographic images to videotex services, the relevant working group had rejected North American ideas of addressing the red, green and blue electron guns of the television set directly, in favour of using emerging international standards for digital colour television based on controlling chrominance and luminance.

Other computer companies to win awards are NCR, Wang, Data Logic, Plessey and Gelsco. A total 126 merit awards were given for specialist companies, as well as main awards for national Press and regional Press.

Image standards proposed

by Donald Kennett
TELEVISION programme and rental group Granada has set up a microcomputer subsidiary, Granada Microcomputer Services.

Despite the group's experience in the consumer market - in catering, holidays, cinemas and bingo halls as well as television - director David Parleeb said the new company would have no interest in selling home computers or games.

"We will be purely directed to-

wards businessmen," he said. "Talking to them in non-jargon terms. We have identified a gap in the market for hardware and software and backup supplied together. We provide a free problem solving service over the telephone, because many problems are just operator problems - someone pressing the wrong key at the wrong time."

"And we can provide detailed and sophisticated backup by application and operating system software experts and hardware men as well."

The company will concentrate on machines from just four manufacturers, which Parleeb believes will serve the purposes of most business users.

They are the IBM Personal Computer, the Altos 886 and 8800, the Osborne One portable CPM-based machine and the handheld Epson HX-20.

ward businessmen," he said. "Talking to them in non-jargon terms. We have identified a gap in the market for hardware and software and backup supplied together. We provide a free problem solving service over the telephone, because many problems are just operator problems - someone pressing the wrong key at the wrong time."

"And we can provide detailed and sophisticated backup by application and operating system software experts and hardware men as well."

The company will concentrate on machines from just four manufacturers, which Parleeb believes will serve the purposes of most business users.

They are the IBM Personal Computer, the Altos 886 and 8800, the Osborne One portable CPM-based machine and the handheld Epson HX-20.

Granada sets up micro subsidiary

by Donald Kennett
TELEVISION programme and rental group Granada has set up a microcomputer subsidiary, Granada Microcomputer Services.

Despite the group's experience in the consumer market - in catering, holidays, cinemas and bingo halls as well as television - director David Parleeb said the new company would have no interest in selling home computers or games.

"We will be purely directed to-

wards businessmen," he said. "Talking to them in non-jargon terms. We have identified a gap in the market for hardware and software and backup supplied together. We provide a free problem solving service over the telephone, because many problems are just operator problems - someone pressing the wrong key at the wrong time."

"And we can provide detailed and sophisticated backup by application and operating system software experts and hardware men as well."

The company will concentrate on machines from just four manufacturers, which Parleeb believes will serve the purposes of most business users.

They are the IBM Personal Computer, the Altos 886 and 8800, the Osborne One portable CPM-based machine and the handheld Epson HX-20.

ward businessmen," he said. "Talking to them in non-jargon terms. We have identified a gap in the market for hardware and software and backup supplied together. We provide a free problem solving service over the telephone, because many problems are just operator problems - someone pressing the wrong key at the wrong time."

"And we can provide detailed and sophisticated backup by application and operating system software experts and hardware men as well."

The company will concentrate on machines from just four manufacturers, which Parleeb believes will serve the purposes of most business users.

They are the IBM Personal Computer, the Altos 886 and 8800, the Osborne One portable CPM-based machine and the handheld Epson HX-20.

'Arcnet for standard' lobby grows

by Donald Kennett
THE momentum behind Datapoint's Arcnet becoming a de facto industry standard in local area networking is growing. Zenith Data Systems, whose range includes the Zenith home-build computers and terminals, has joined Tandy

and Zyrar in the list of manufacturers that have adopted it.

De facto standards are the way forward in Datapoint's R&D chief Vic Poor's view.

"I don't have much confidence in the standards process," he said last week at the company's annual

user group meeting. "Getting people together from six different companies that don't have a product in the field isn't the way to make a good system. And then the compromises that have to be made between them don't make it any better."

Datapoint does not participate in any standards discussions. "Whatever came out we would have to change our system," Poor said. On the other hand if a standards committee came out with a better system Datapoint would use it, he added. It would also produce an inferior system if users wanted it.

"Standards are set in the marketplace," he said. "What matters is what does the user buy."

"CCITT is probably the most effective standards group there is and curiously they don't call their products standards but recommendations."

Datapoint's centre in Brussels has been working on software to support CCITT's teletex "super telex" service specification.

"When we started with Arcnet our view of it was simply to extend the backplane. It has no layers like the ISO model. It's just a very fast low-level protocol that allows one task to talk to another task in another processor with the least amount of intermediate protocol to go through."



POOR... Not much confidence in the standards process.

"Standards are set in the marketplace," he said. "What matters is what does the user buy."

"CCITT is probably the most effective standards group there is and curiously they don't call their products standards but recommendations."

Datapoint's centre in Brussels has been working on software to support CCITT's teletex "super telex" service specification.

"When we started with Arcnet our view of it was simply to extend the backplane. It has no layers like the ISO model. It's just a very fast low-level protocol that allows one task to talk to another task in another processor with the least amount of intermediate protocol to go through."

"Standards are set in the marketplace," he said. "What matters is what does the user buy."

"CCITT is probably the most effective standards group there is and curiously they don't call their products standards but recommendations."

Datapoint's centre in Brussels has been working on software to support CCITT's teletex "super telex" service specification.

"When we started with Arcnet our view of it was simply to extend the backplane. It has no layers like the ISO model. It's just a very fast low-level protocol that allows one task to talk to another task in another processor with the least amount of intermediate protocol to go through."

"Standards are set in the marketplace," he said. "What matters is what does the user buy."

"CCITT is probably the most effective standards group there is and curiously they don't call their products standards but recommendations."

Datapoint's centre in Brussels has been working on software to support CCITT's teletex "super telex" service specification.

"When we started with Arcnet our view of it was simply to extend the backplane. It has no layers like the ISO model. It's just a very fast low-level protocol that allows one task to talk to another task in another processor with the least amount of intermediate protocol to go through."

Hyperion attracts more ventures

THE Hyperion portable IBM-like personal computer continues to attract new ventures. As well as being sold under a Bytec label through Gulfstream Computer Products - Bytec is the Canadian venture capital company that last week bought Gulfstream and has a minority holding in the machine manufacturer Dynalogs - it is now to appear as the Ajile from Slough-based Anderson Jacobson.

Up to now, Anderson Jacobson specialised in terminals and data communications, but has signed an OEM deal with Dynalogs to import the 16-bit portable, its first venture into business micros.

The Ajile/Hyperion uses the same 8085 processor as the IBM PC, and is claimed to be fully software compatible with the PC. Hardware compatibility will come in a couple of weeks with an expansion unit that will take IBM PC circuit boards.

The unit, with 256K RAM, twin 5 1/4-inch floppy drives, MS-DOS operating system, Multisync spreadsheet and InScribe word processing package, costs £3,600 from Anderson Jacobson or Gulfstream. An entry level machine, with only one floppy and without the application software costs £2,900 from Gulfstream.

COMPANY NEWS



GEER... Workstation cost of about £3,000.

City puts £4.9m into storage system venture

DESPITE the smell of roasted leveret still wafting around the financial ruins of Io Technology, Bermuda-based systems company Mnmemos managed to raise a total of £4.92 million on the London financial markets last week.

Mnmemos is a spin-off from Combined Technologies Corporation, itself a spin-off from the oil company Tricentrol.

Comtech, after raising the money for Mnmemos, and floating the Mnmemos shares on the United Securities Market, will retain a 63% holding in the company.

Mnmemos is the commercial and marketing organisation for a new storage system which has cost over £3 million to develop so far, and which comes from the Patcenter Laboratories in Cambridge.

No sales have yet been made of the PVC disc-based system, which will hold either 6,000 images, or 160-Kbytes of data, but James Longcroft, company chairman, said they were in serious discussion with five companies, and in more general discussion with about 50 companies worldwide.

Longcroft agreed that the company has not got its marketing right so far but said just one sale would be worth up to £70 million.

The Mnmemos 6000 system is based on images back-projected off the disc on to a screen in the workstation. The images are then read by a charge coupled device and fed into the workstation's Motorola 6809.

According to Mnmemos marketing director Chris Geer, the system will have a workstation cost of about £3,000.

This compares favourably with the cost of computer-controlled microfiche at about £20,000, or CRT graphics at about £15,000, Geer says.

But to get that workstation cost of £3,000 you have to buy about 300 workstations and, according to Longcroft, change your whole system of working.

At the core of an in-house Mnmemos system is the studio which creates the discs, and that alone will cost £1 million.

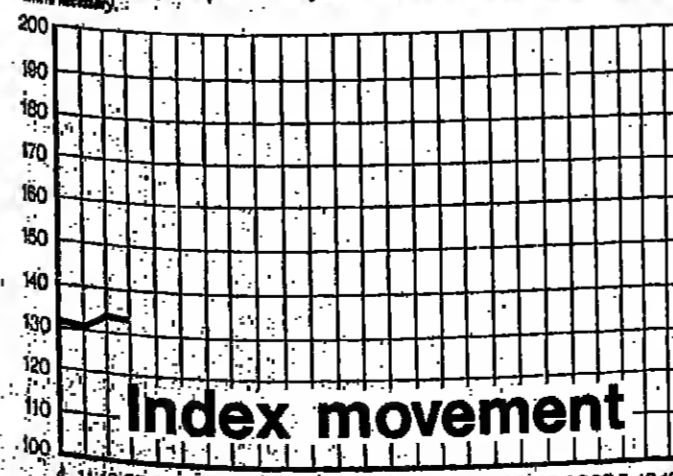
The offer documents accompanying the Mnmemos launch warn that there are high risks attendant on the venture, and break-even is not predicted before 1986.

SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Index 1983				Index 1983			
Price		Change		Price		Change	
1983	1982	1983	1982	1983	1982	1983	1982
High	Low	High	Low	High	Low	High	Low
100	100	100	100	100	100	100	100
101	101	101	101	101	101	101	101
102	102	102	102	102	102	102	102
103	103	103	103	103	103	103	103
104	104	104	104	104	104	104	104
105	105	105	105	105	105	105	105
106	106	106	106	106	106	106	106
107	107	107	107	107	107	107	107
108	108	108	108	108	108	108	108
109	109	109	109	109	109	109	109
110	110	110	110	110	110	110	110
111	111	111	111	111	111	111	111
112	112	112	112	112	112	112	112
113	113	113	113	113	113	113	113
114	114	114	114	114	114	114	114
115	115	115	115	115	115	115	115
116	116	116	116	116	116	116	116
117	117	117	117	117	117	117	117
118	118	118	118	118	118	118	118
119	119	119	119	119	119	119	119
120	120	120	120	120	120	120	120
121	121	121	121	121	121	121	121
122	122	122	122	122	122	122	122
123	123	123	123	123	123	123	123
124	124	124	124	124	124	124	124
125	125	125	125	125	125	125	125
126	126	126	126	126	126	126	126
127	127	127	127	127	127	127	127
128	128	128	128	128	128	128	128
129	129	129	129	129	129	129	129
130	130	130	130	130	130	130	130
131	131	131	131	131	131	131	131
132	132	132	132	132	132	132	132
133	133	133	133	133	133	133	133
134	134	134	134	134	134	134	134
135	135	135	135	135	135	135	135
136	136	136	136	136	136	136	136
137	137	137	137	137	137	137	137
138	138	138	138	138	138	138	138
139	139	139	139	139	139	139	139
140	140	140	140	140	140	140	140
141	141	141	141	141	141	141	141
142	142	142	142	142	142	142	142
143	143	143	143	143	143	143	143
144	144	144	144	144	144	144	144
145	145	145	145	145	145	145	145
146	146	146	146	146	146	146	146
147	147	147	147	147	147	147	147
148	148	148	148	148	148	148	148
149	149	149	149	149	149	149	149
150	150	150	150	150	150	150	150

The table shows the closing prices in London on Friday and in America on Thursday. The Shares Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



Index movement

Apple rise

APPLE'S second quarter results show a 73% rise in earnings to \$23.9 million - 40 cents a share compared with last year's 24 cents. Figures for the half year are \$47.4 million, or 80 cents a share. Total sales for the half year stand at \$442.3 million.

Sorry, Dave

IN a story last week (April 21) we incorrectly stated that Davey had temporarily suspended use of its Fujitsu mainframes when OS/IV has merely suspended Juno, while operating system until Juno, while adding a Fujitsu 382 mainframe to its existing installation.

Norsk hopes to raise £40m

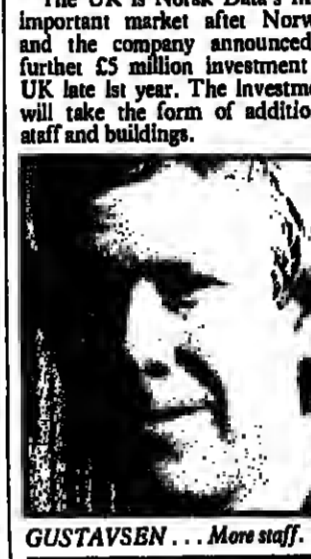
by John Riley
NORWEGIAN minicomputer manufacturer Norsk Data last week filed for 1 1/2 million new shares with the New York Stock Exchange.

Making the announcement at Norsk Data's central European headquarters in Newbury, Tor Alheim, vice-president of engineering, said: "This placing should raise £30.40 million and will make Norsk Data one of the more solid companies in this field."

"We have chosen the US stock market because the market is more mature and since our listing there in January our price there has doubled. The climate in the US is right now, being very pro technology."

Last March, Norsk Data made a private placement of 300,000 shares in London which raised some £10 million, described by Alheim as a "stepping stone" to last week's placing.

The UK is Norsk Data's most important market after Norway and the company announced a further £5 million investment in UK late last year. The investment will take the form of additional staff and buildings.



GUSTAVSEN... More staff.

Microlease gets USM listing

MICROLEASE, the Manchester-based instrument and micro leasing and rental company is placing its shares on the Stock Exchange Unlisted Securities Market this week.

The object is to raise additional capital as well as allowing founding chairman David Rennie to sell some of his shares. Microlease was founded by Rennie four years ago with crucial help from the Co-operative Insurance Society which will continue to hold 22% of the equity after the listing.

IBM puts on \$976m profit spurt

IBM is doing its share to lead the world out of recession with record first quarter sales and profits.

In the wake of the first real spurt in the company's annual profits for almost four years, 1983 is off to a good start with \$8.2 billion sales and \$976 million profits.

The sales increase represents a 17.3% hike on the first quarter of 1982, and profits are 23.6% ahead.

"These improvements are a continuation of the growth we experienced last year and confirm our optimism about the future of information processing," said IBM chairman John Opel.

The continued progress in the results drove IBM shares up to \$109, leaving few commentators in any doubt that a \$125 figure may be even \$150, is now a real prospect.

Part of the improvement, particularly in the profits, arose from IBM's continued success in shifting customers from leasing machines to buying them. Purchases mean revenue now, while leasing, though profitable, means

deferring revenues to future years. Opel said purchases were up by 44% and leases were down 9.4%, no doubt entirely due to the fact that IBM last year dropped the purchase price on big machines by 15% and upped lease prices by 15%.

Unlike many US companies, Opel noted that IBM's growth in profits from subsidiaries abroad was particularly strong compared to last year, with large-scale storage products like the 3380 and the 308X mainframes leading the way.

The IBM annual adjustment of the accounts for inflation over the past five years (see table below) shows just how dramatic the turnaround in the company's business fortunes have been recently.

Pew, if any, of the New York and Wall Street analysts have queried IBM's ability to sustain its recent performance.

But maybe not enough attention is being paid to the risks that success will bring another round of anti-trust activity in the US and elsewhere.

FIVE-YEAR COMPARISON OF SELECTED FINANCIAL DATA ADJUSTED FOR GENERAL INFLATION. (Source IBM annual accounts)

	1982	1981	1980	1979	1978
Gross income from sales, rentals services*	\$34,364	\$30,852	\$30,706	\$30,403	\$31,182
Earnings per share	\$7.39	\$6.52	\$6.82	\$6.86	\$7.87
Cash dividend paid per share	\$3.44	\$3.65	\$4.03	\$4.57	\$4.26
Market price per share	\$96.25	\$60.37	\$79.51	\$85.61	\$110.42

*Dollars in millions on this row.

NMW heads for a profit

A SPECTACULAR profit rise is predicted for NMW, the Nantwich-based specialist bureau.

Neil Barton, a computer industry analyst at Stockbrokers Henry Cooke Lumsden and Co, says NMW is likely to produce a pre-tax profit of £1.2 million for 1983, against £800,000 this year.

NMW provides a back office service to stockbrokers by creating the share dealing records and documentation for more than 37% of all transactions on the Stock Exchange.

The company's last reported

turnover for 1982 was £2.93 million. The huge profit margin is explained by Barton, who notes that while NMW's costs are fixed, its profits and sales derive from the fees it charges for each bargain struck on the Stock Exchange.

The volume Stock Exchange trading has risen by over 20% in the first quarter of this year and there is no reason to believe trading in shares will fall.

Barton says NMW now has £1.5 million in cash in the bank, a good cushion against fluctuations in Stock Exchange volumes.

NCR's £34m result disappoints

US COMPUTER giant NCR has increased its net first quarter profits by 11% to \$34 million on sales up 4%, at \$750 million, on the same period of 1982. But chairman William Anderson admitted that profits of less than 5% on turnover were still disappointing, and blamed the dollar's 11% appreciation against other currencies which had hit overseas business.

NCR has recently announced new products based on VLSI technology.

Dividend cut

BASF, the West German chemicals company which sells Hitachi computers in Europe, announced a sharp cut in dividend after a 20% drop in worldwide profits to DM1 billion (£270 million). Another German chemical company, Hoechst, recently cut its dividend, and Bayer is soon expected to announce a cut.

Profits chipped

MOTOROLA, the US maker of chips and electronics products, has reported profits down 8% at \$32 million, on sales up 3% at \$942 million. The results are as expected, says the company, and reflect uncertainty among buyers of capital goods during late 1982. Sales of semiconductors rose 6%, and new orders were 13% up.

Same again

COMPUTERVISION says profits will fall 24% to about \$7 million for the first quarter compared with the same period of 1982. President James Barrett said that first quarter net profit would be the same as for the last quarter of 1982.

Saab sales up 10%

SAAB-SCANIA, the Swedish motor and aerospace group, has increased its first quarter sales by

SOFTWARE FILE

French airline flies to Univac

AIR FRANCE is preparing to move its management software on to Univac 1190 mainframes when the new and more powerful machines come into service next year.

The French national airline's four main systems - Alpha-3 controlling reservations, Sytare the ticket module, a Gatan overseeing check-ins, and Sage the flight schedule record - began running on 1108s before being shifted on to four 1100/40s and four 1100/80s. The need to maximise operational efficiency, with world air traffic declining during the recession, has persuaded Air France to make a massive long-term investment in bigger machines.

A team of 160 systems staff is updating the Assembler and Fortran programs to take advantage of the greater speed and storage capacity.

The airline's data processing facilities were moved from Paris to the Riviera in 1977 when the government decided to encourage the decentralisation of service industries.

Backlog sparks a generator boom

APPLICATIONS generators came under the microscope at a packed seminar in London put on by BIS Applied Systems.

The booming interest in the subject - which reflects a mounting backlog in Britain's data processing departments - was shown by the turn-out of 300 delegates from many of the country's biggest companies for the one-day conference on automating system development.

BIS's September 1982 event, on fourth generation languages, drew only half that number.

The object was not to evaluate the comparative merits of the tools available, but to encourage users to decide what would be best suited to their own computing environment, said BIS director David Broughton.

Main products to come under user scrutiny were Info, the Henco system sold by Doric Computer Systems of Watford; Mothematika's Ramis-11; the Application

Language Liberator, ALL, written by Data Technical Analysts and distributed by CMC; and the German Soflab's Maestro, marketed by Philips.

David Whiteside, managing director of Scatrah Computer Services, said they had looked at 30 software products and ALL had achieved the best results under tests. It completed 98% of a job conventionally scheduled for three weeks within three hours. Information Builders' Focus had come second.

BIS senior consultant Peter Sellars predicted that ALL's predecessor PRO4 would soon become far more widely available in the UK.

"These generators would not do away with the need for analysis," Sellars warned. System development could still be expected to be a tortuous activity, despite a 10-1 improvement in programming productivity, he said.

Keith Craddock, data process-

ing manager for Davy Engineering's subsidiary Davy McKee, said his firm's use of Info had been a great success, boosting individual programmer's output by five times and improving overall department efficiency by eight times. Ron Cowie, for BP Oil, attested to the benefits of Maestro, and Bob Hall, for ICI, to those of Ramis-11.

Doric managing director Mike Hare undertook to write a system using Info while the conference was taking place. He followed a specification given to him by BIS at 9.30am. By 4.30, when delegates were invited to see how he had fared, 16 out of 23 milestones had been passed. Broughton commented: "We never thought that he would get that far, as it was about 12 to 15 man-weeks of Cobol work."

BIS is to unveil its own project support system, Modus, in competition with Maestro, in the middle of the year.

Broughton . . . "Encouraging users to decide what's best".



MICRO NEWS

Italians follow chip trends

ITALIAN chip maker SGS Atcs is following the semiconductor company trend and moving into systems. It has brought out a multi-user business system, the UX16, built around its Z8000 processor second-sourced from Zilog, and running Unix - an implementation of Unix version 7.

"We see our entry into the business market as a natural extension of our activities," says SGS managing director for northern Europe, Waldo Thorn. "The SGS UX16 is available with business oriented facilities to allow software applications and business automation tasks to be developed both quickly and economically."

The UX16 grew out of a development system to support its range of Z8000 microprocessor products - as Zilog's System 8000 business system grew out of its Z8000 development system - and has application packages available for computer-aided design, business accounting, financial control and office automation.

It comes with integral Winchester disc mass storage, and can be linked with other UX16s in networks.

French firm will make Fortunes

by Jack Gee
THOMSON-BRANDT, the State-owned French electronics firm, is to begin manufacture of Fortune's Micromega microcomputer at a plant in Brest, Brittany this summer with an output target of 600 machines a month in 1984.

This objective, which will be modified according to market demand, is based on the expected sales this year in France of 2,000 units - about one tenth of the French microcomputer market - of which only about 500 will be made in Brest.

Thomson holds a 33% voting stake in Fortune although its shareholding in the American company dropped from 21.6% to 17.4% following the recent flotation of its shares on the New York stock exchange. But the French firm remains the main foreign partner in Fortune.

Thomson is confident it can develop sales of the Micromega - priced at between 70,000 Francs

(£7,000) and 170,000 Francs (£17,000) because it argues the machine fits neatly into a slot for office automation.

The French nationalised company says the cheaper micros work out too costly for a firm when introduced in large numbers in the same way.

Thomson-Brandt's decision to launch production in France of the Micromega is clearly dictated by the success of the Apple and the arrival of IBM's personal computer on the French market - although overall sales of micros this year will be small compared with those in Britain.

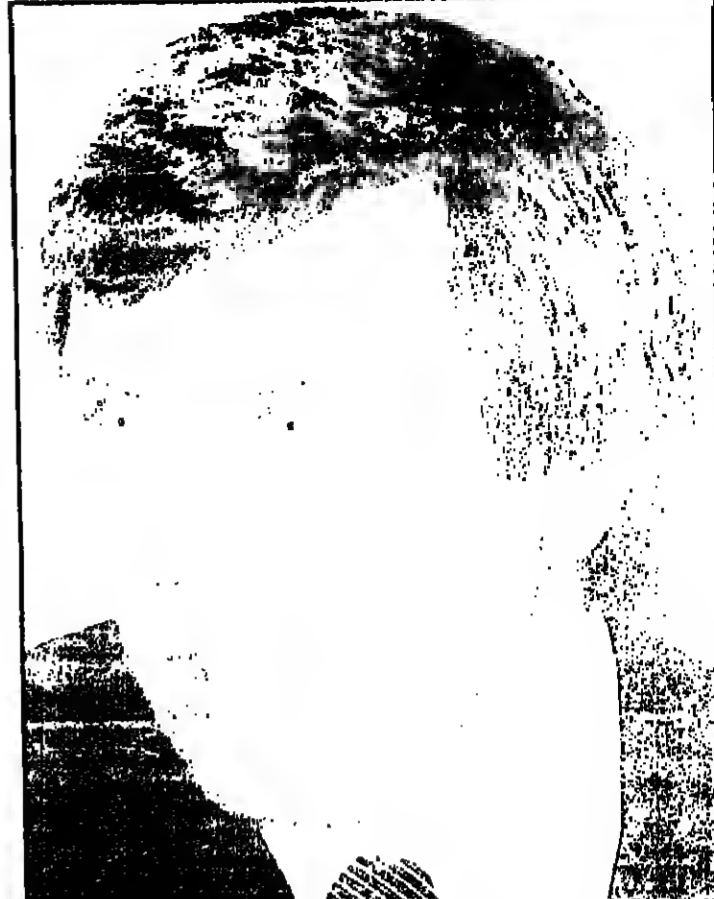
A "mouse" device of the type available for Apple's Lisa will soon be available for the Micromega. Thomson-Brandt is organising a new marketing network to promote the Franco-American micro. It claims to have 60 distributors ready and 20 maintenance centres.

It expects that the private sector will provide only 32% of orders with 68% going to government departments and publicly owned firms.

Thomson is one of two major OEMs Fortune sells to - the other is US company Bunker Ramo - that do not compete on a mass basis, but are incremental to Fortune's own business, says Fortune's marketing vice president David Van Den Berg. Bunker Ramo sells primarily to banks and brokerage firms.

Fortune itself is turning its marketing attention to direct sales to large organisations. This route has been important to Fortune in the US, where customers include Ford, the Bank of America and Bell Laboratories.

Fortune's recent offering on the New York over-the-counter market raised more than \$90 million, and it has a further \$20 million line of credit from the Bank of America. So far it has spent more than \$9 million on R&D.



Van Den BERG . . . "OEMs incremental to Fortune's core business".

'Adapt or die' warning to batch bureaux

BATCH bureaux will be dead in a few years if they don't adapt, warned John Davis, managing director of Fletcher Computer Services in Birmingham last week.

His bureau is adapting by moving towards online database services. Conversion from batch via offline databases to fully online systems is being carried out with the aid of Burroughs' Line system generator.

Linc - the logic and information network compiler - was introduced by Burroughs late in 1981, but has remained largely untested in this country until now, despite enthusiastic reports from overseas users.

Fletcher recently completed a pilot project for Shell UK Oil to manage its 1,500 road tanker fleet. "They desperately wanted to go live in ten weeks' time and we still hadn't put pen to paper," said John Davis.

"It was equivalent to 100,000 lines of Cobol source code and could have taken us a year to do. So we were in a bit of a hole."

Linc dropped on his desk at the right time, he said. They had persuaded Shell to put back the completion date by only three weeks and, using Linc, had been able to meet that target.

Shell project engineer Dave Morgan was pleased to be able to announce "the most radical change that has ever taken place in the administration of a commercial fleet."

Eight Shell sites and the head office in London are linked to Fletcher's mainframe via Shell's own Wythenshawe computer centre.

The system gave a complete breakdown of operating costs of all vehicles down to the level of engine components.

With oil companies struggling to break even as the recession continues, transportation of fuel is a vital element in their costs, which can only be effectively controlled by managers if they have accurate and up-to-date information.

"They were putting the pressure on us to deliver in an impossibly short time and without a good system generator we could not have done it," said Davis.



JONES . . . "Bespoke programming far too expensive."

Flood of Unix applications on the way

UNIX applications software is beginning to trickle on to the market, with an announcement last week of a business package for micros to run under the multi-user operating system.

Until now Unix has been widely acclaimed as the most sophisticated system available to the new generation of micros, but the revolution promised by it has failed to transpire, partly due to lack of applications.

The launch of Precision Software's Unigen could mark the start of a flood of those missing links. Precision, funded by successful software for the Commodore 64 machine, was set up three years ago by ex-Computerplan technical director John Traumer who took on US Unix expert Tom Leonard.

Leonard's Unix package is a marriage of the Unix systems language C and Micro Focus' CIS Cobol. First versions available are on the Pixel and Bleasdale machines, with plans to convert the software for use on Fortune, Altos and Wicat.

Precision intends to promote its Unigen product in the US from this autumn.

Emrys Jones, president of the European Unix Users Group predicted that there would be many more Unix applications coming on the market in the near future. Boardrooms are now telling DP managers to get portable Unix packages and put an end to constant rewriting, he said. Bespoke programming was now far too expensive.

Leonard welcomed IBM's decision, which became public at Hannover Fair, to support Unix on its PC, 4300s and Series 1 machines.

You already have the most efficient way of servicing a computer at hand.

It's a faster and cheaper alternative called Remote Services.

Which simply means using the telephone to link your computer to our Basingstoke Support Centre.

This way we can use techniques like true computer to computer diagnosis to find faults fast (often before you're aware of them).

And should on-site service be required engineers know what the problem is, even before they arrive.

It means our service staff make the best use of their time with all the facilities at Basingstoke.

And we pass the savings on to you.

In fact you can save 10% on hardware maintenance costs alone by adding Remote Services.

But the real saving will be in increased uptime and more productive use of your computer.

Remote Services operates 24 hours a day with options like hardware and software remedial maintenance and regular remote VAX system checks.

Not to mention our new high speed communication links.

Of course all these telephone connections are under your control.

You hold the key which must be used to gain access to your computer.

If you'd like further information you could always visit us at Basingstoke.

But it may make more sense to phone us instead on (0256) 56101.

Doing more. The Digital difference.

digital

Japan's UK expert investment begins

by Kevin Cahill
The first Japanese investment in UK expert systems formally commenced this week when the Polytechnic of The South Bank started two students working on expert systems for Sord Computers of Tokyo.

The two students are part of an overall package which will cost Sord about £30,000 a year over the next three years and is intended to result in commercial packages for use of Sord's rapidly lengthening list of microcomputers.

According to the director of Knowledge Based Engineering (KBE) centre at the poly, Annie Brookings, the first systems staff will develop with the centre on self-tutoring systems in maths and English for use of Sord's M5 micro.

Although a principal objective of the Sord South Bank collaboration is the production of commercially usable expert systems, from which the poly will derive a 10% sales reversion, the Sord sponsored students will engage with other staff at the KBE centre on basic research into expert systems.

Brookings is already engaged in some of this research and her joint application for an EEC grant from the EEC is thought to be one of this country's front runners for that money.

The KBE centre was set up about six months ago by Brookings, who believes that such centres are the only way for the UK to retain

its current lead in artificial intelligence and expert systems.

According to Max Bremer, who is head of the Open University's KCC Systems department and who is also on the advisory committee to the KBE, the UK will lead the world in artificial intelligence and knowledge-based engineering over the next few years. The Japanese believe this, having drawn substantially on UK sources like Philip Treleven of Newcastle University and Roger Needham of Cambridge to develop their expert system components of the Fifth Generation Computer project.

Sord's president Takayoshi Shima, who used the occasion to indicate that the desk top array processor his company is developing will be available next year, said that the investment at the polytechnic was just a first step in UK collaborations.



BROOKINGS . . . wants cash.

Zilog's pirate woes grow

ZILOG's troubles with unauthorised copies of its huge-selling Z80 microprocessor are growing. As well as the action for patent and copyright infringement under way in the US against Japanese manufacturer NEC, threats have surfaced of an assault on Western markets by an East German manufacturer.

The East German company VEB Funkwerk Erfurt is reportedly pushing on the competitive pricing of the Z80 parts, and was seeking Western orders at the recent Hannover Fair. But so far the impact on the UK is so small as to be almost invisible.

"We are worried because the East German chip is an unauthorised copy," says Zilog's UK managing director Phil Pittman. "But we know very little about it really."

It is nothing like as widespread as the NEC Japanese copy, and I would expect any East German device to be viewed with suspicion over here.

Chip distributor Hi-Tek is also dubious about such a device. "It is just a copy, then there are lots of questions on the quality that would need to be answered," says marketing director David Greenfield. "There is no point in having the cheapest chip around if it doesn't work. Even the really low cost video application companies have very rigorous quality control."

There are already various incarnations of Zilog's original Z80 design around. Apart from Zilog itself, versions are made under licence by Moxtek, SGS Atcs and Sharp.

Micro News is compiled by Robert Parry



LAMDOND... An eagle over his US counterparts.

Britain's own home-grown IBM-watcher

IBM-watching is a whole industry in the US. A typical IBM-watcher is an individual who gathers intelligence information about Big Blue, and earns a living from market reports and consultancy services to IBM's competitors, and to stockbrokers.

Fred Lamond is our home-grown IBM-watcher. His fluent command of the French language gives him an edge over his US counterparts who often have to speak through interpreters at conferences.

His style is different, too. Whereas US-based IBM-watchers employ armies of sidekicks to make their jobs easier, Lamond does not even have a secretary. And where they try much emphasis in information for investors, Lamond concentrates on IBM's technical side.

This approach gives Lamond a fresh perspective on the rationale behind IBM's moves.

For example, he contends that IBM's entry into the Personal Computer market is at least as much a defensive as an expansionary move.

"Ever since Tandy became the first personal computer manufacturer to announce an IBM 3270 terminal emulator on its TRS80 in June 1981, personal computers have become potential replacements for all 3270 terminals, especially those used for processing personal computing programs such as IBM's VSPC, CMS, ADI and Plancode packages," says Lamond.

"Since IBM sells the Personal Computer on both sides of the Atlantic, not only through independent retail chains but also through its direct sales force in quantities of 20 or more, this proves that it regards its existing medium to large computers users as an important PC outlet."

10 YEARS AGO

FROM COMPUTER WEEKLY OF APRIL 26, 1973: A report commissioned by the Conference of Industrial Research Associations stated that the National Computing Centre was ineffective and that its links with industry were weak. The allegations

were refuted by the NCC... Lancia resigned from the Software Houses Association, leaving the ICL ranks sorely depleted. ICL launched the 2903 aimed at the lower end of the market. Rascal-Mingo won a Queen's Award for export performance.

Penny mentality—when pounds are needed

TIME is running out on attempts from many quarters to coax, cajole or goad the holders of the national purse strings into creating the climate in which major new information technology industries can be built up.

Yet it is painfully plain that such an initiative can come only from government and cannot be generated within the industry as it exists, since control of companies accounting for 1st the larger share of the industry's sales resides elsewhere than in Britain.

Their masters decide on new products and new plant in terms of global strategies, or the reactions of New York Stock Exchange analysts, whichever comes first.

It is pointless, meanwhile, to compare the new government-provided research and development budget of £230 million for "future industries" with what James Callaghan spent in 1978/9, even if it is 135% more in real terms. The new funds are a mere 10% of what the Mitterand government has been planning to spend this year, next year and right up to 1988 on an ambitious, not to say spectacular £14,000 million plan to emulate Japan.

It is Jean-Pierre Chevenement and his successor as French Minister of Research and Industry, Laurent Fabius, not Callaghan who needs to be scored over. It is the workings of the development contracts placed by America's Department of Defence that should be closely studied.

Of course, it could be said that Alvey Committee's proposals to spend around £350 million on enabling technologies by 1990 compare well with the Japanese plan, sponsored by that country's DoI - MITI - to spend a reported \$450 million between now and 1991 solely on building a prototype fifth generation computer.

But MITI's funds are committed, work is in progress, vast sums are being poured into developments of VLSI circuits and the fully automated manufacturing methods they pre-suppose, while the DoI appears to be shying away from Alvey as it considers yet another IT industry report.

It will stem, in increasing measure, from software imports as de-

businesses, and compared with France, now about to inject a further £800 million into its Cii Honeywell Bull operation.

It can be shown, very simply and very quickly, that significant action on "future" industries is urgently required. Figures prepared by the National Computing Centre and presented by David Fairbairn at a recent session of Pitcom, gave Britain's balance of trade deficit in this area for 1980 as £300 billion and for 1990 as £1,800 million, on present trends. The deficit, at the moment, comes largely from hardware.

It will stem, in increasing measure, from software imports as de-

vice costs continue their rapid decline.

Britain is putting up a poor performance in the world IT market - this year around £70,000 million - in spite of all the painful efforts to keep alive domestic mainframe expertise and create a domestic high silicon technology centre of excellence. Neither objective is, in itself, a condition *qua non* for prosperity or, indeed, for survival in this bitterly contested arena. Only a properly structured strategy, which applies to every facet of the industry from communications to education, will do.

But who will think it out and how, if funds on the French scale

Warren Werblow is chief executive of Scicon

Some 115 intervenors contributed to Alvey, even more than those who submitted position papers to the memorable sessions of Select Committees A and B. Were they really ten years ago?

Those sessions constituted the most thorough investigation any UK industry had ever been subjected to and they resulted in a mound of paper, which the then government largely ignored, preferring to pursue the more easily understandable goal of keeping domestic hardware manufacturers alive.

Even there they were faint-hearted compared with Germany, which has spent three to four times as much on domestic computer



become available, would they be channelled into industry?

Now there's a pretty problem for Whitehall: having to make decisions perhaps favouring one company over another.

So far, the software and services industry has been the poor relation. It is revealing, for example, that, in figures published when the recent £185 million innovation package for industry was announced in the March Budget, the Software Products Scheme attracted just £5 million in the decade 1972-1982.

In June 1982, the scheme was relaunched with a further allocation of £10 million; and now, following further representations by the Computing Services Association, there is a further £15 million, but over three years.

For years we've been saying how important the British software industry is: that it's a national asset that stands comparison with the software industry in any other country. But our money, judged on the international scale, is not where our mouth is.

The key to the future development of leading edge industries must lie in the ability of all of us to think big.

Our currency to date has been in pennies when pounds are needed.

Warren Werblow

DOWNTIME

DEC users coin it

THE Digital Equipment users association is coining it with a £250 million national publicity campaign - courtesy of the Treasury.

Decus - are inscribed on all 250 million of the new £1 coins, issued last week. And the name is, in the face of the coin but in the more unusual, eye-catching position of round the edge.

But the Treasury - a Logabex user - claims the inscription had nothing to do with any links with Decus. Indeed, the full inscription reads "Decus et tutamen," which means "an ornament and a safeguard".

The Treasury says it is a safeguard against counterfeiting, for it is difficult to forge an inscription round the edge of a coin. And to complete the picture the inscription is a quotation from Virgil's Aeneid epic poem.

Pen power

A COUPLE of weeks ago, I whinged at great length over my non-invitation to the ICL Computer Users' Convention at Ennalsbourne. Imagine then my surprise at the receipt of a telephone request for the honour of my company at the event.

The invitation did, however, carry the rider, "I must once again ask you to refrain from attending Robb Wilmore's presentation."

Perhaps if I mean about this, I'll get invited to that, too.

Russia's other cold war

IF you ask a Chinaman what he thinks of Russian ball-point pens, he will probably reply with guffaws of laughter. By making jokes about the quality of Russian material goods, the Chinese relieve the paranoia they feel about their large neighbour.

In the West we could do with a harmless way of making fun of the Russians, too. So I was pleased to see that some of our academics are starting to tell jokes about Russian weather forecasts.

We decided it was time to see for ourselves if Russian weather forecasts were inferior. Accordingly we studied five day forecasts from about 10 different countries

presented in the form of the synoptic map of cyclones and anti-cyclones well known to watchers of BBC television forecasts.

The forecasts looked almost identical with one exception - the Soviet map. It was, of course, possible that the Russian forecast was right, and everyone else was wrong.

But this is not the experience of the West's leading weather experts, who are baffled that the Russians are so often out of line with their predictions.

"It could be the quality of their computer hardware," suggests one metman, who would rather not be named.

What Burroughs US does...

ONE of the problems with large corporations is the high probability of getting into on-going "one-hand-doesn't-know-what-the-other-is-doing" situations.

Latest of the big boys to fall foul of this truism is Burroughs, which proudly announced a new gas plasma display on April 8.

On April 13, the company informed us that the US displays group, which makes the things, was being shut down. The letter coded with an apology for the confusion and expressed the hope that it hadn't caused any problems.

Don't worry about us mate. You seem to be the ones with the problem.

Britain's American hope

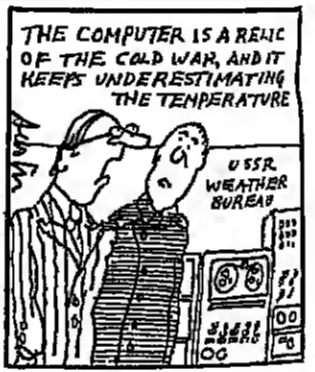
BRITAIN'S latest great white hope for the wresting of the America's Cup from the hands of the odious colonialists who have held it for 2,000 years or so lies with the optimistically-named Victory '83.

And the computer resources behind the attempt come from, yes, you've guessed it, America. Hew-

lett-Packard has supplied two HP120s and an HP-41CV hand held micro to help our gallant team.

And of course, if we should actually win, the Americans can say that it was their hardware which did it for us.

If we win.



Mainframe nostalgia

BURROUGHS' new entry-level system, the B95, certainly brought a few nostalgic tears to a few seasoned hacks at its launch. Not because the beast is designed and built solely in the UK, but because it brought back happy memories for many people.

How can this be? A mere machine bringing jumps to joy? Well, the reason is simple. The B95 may just be a simple mini, but it looks like a mainframe, but it looks like a mainframe.

Whoever was responsible for the external design wins Chd's 1983 Best-Looking Computer Award. At last, those people who claim that micros and minis aren't real computers can buy a mini that looks like all intents and purposes like a mainframe which has been attacked by African head-shrinkers.

It may be small, but it looks like a real computer. I want one.

Chad

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, April 28, 1983

GATT — a lot of pious nonsense

AN international group of 19 private but influential individuals is working towards a more open exchange of technology information across country boundaries and more liberal attitudes to international trade in services. The so-called International Committee on Trade in Services is working on reports it hopes to put before the next meeting of world government ministers involved in the General Agreement on Trade and Tariffs (GATT).

Whether such a group can be successful is open to question. But any work which draws attention to the mockery known as GATT can only be welcomed.

GATT is little more than a lot of pious nonsense which supposedly opens up government contracts to any suppliers, regardless of their nationalities. But it is that bastion of the free world, the US, which makes the agreement worthless to companies on this side of the Atlantic as far as selling in the US is concerned.

For example the US has managed to get exemptions written into GATT so that agencies including its Department of Transportation, postal service and Department of Energy are not covered by the agreement. Yet contracts from the UK equivalents are open to US firms.

European companies are further hampered by the Buy America Act, introduced in 1933 to protect US firms during the slump. This demands that companies bidding for central government contracts must manufacture in the US.

Any hints of European countries imposing moderate restrictions on government contracts have seen US firms bleating about unfair trading. IBM, for example, threatened the UK government with GATT rules over the contract for the Driver and Vehicle Licensing Centre.

It is interesting that there are six US people on the International Committee on Trade in Services. It is to be hoped that they and their colleagues can do something to shame those countries which do little more than pay lip service to GATT.

Rethink telecomms

CRITICS of the European telecommunication industry came out in force last week.

In Birmingham, Michael Corby, director of the Telecommunications Users Association, said that the government had the structure of its telecommunications mechanism wrong. He recommended that it throw in the towel and begin again.

In Holland, Computing Services Association director-general Doug Eyclons attacked the club of European PTTs, the Conference of European Posts and Telecommunications, as a price-fixing cartel. He sees the monopoly positions of European PTTs as a major distorting obstacle for multinational computing services companies. But he says European Commission says it is powerless to act because the CEPT is not a legal entity.

And a group of international business and government leaders has banded together to fight what it sees as "the proliferation of national restrictions to international information flows".

The government, of course, has put forward its Telecommunications Bill in the hopes of going some way towards meeting the latter two criticisms. But with ever-louder hints of a June election in the air, it may find that by default it is following Corby's recommendation that it or its successor must begin again.

That would be no bad thing. While the principle of setting British Telecom free is generally seen as a major step towards liberalising the telecommunications industry, the mechanism chosen falls short of a well thought-out policy.

There are two main shortcomings with the UK approach: the Office of Telecommunications (OFTTEL), which will administer BT's operating licence, does not have the power to ensure that BT does not abuse its dominant position; and it is not clear that OFTTEL will issue enough licences to ensure real competition in public telecommunications.

If election fever is premature, let us hope that the House of Lords, who have the last crack at the Bill before it passes into law, does more than give a rubber stamp.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by J. B. Mathews of Gadalming, Surrey, who wins £5.

And Chips the computer, who not only produces the comic, but also makes the tea.

School TV Times

Design investigation

MANY organisations are currently struggling with a 50% maintenance workload and the know-how from practical experience the cost of not getting things right at the design stage.

The problem is finding a way of designing systems that will meet management objectives and user needs while at the same time being able to accept the inevitable future changes.

The National Computing Centre, as part of a project sponsored by the EEC, is currently investigating systems design methods with a view to establishing what a design method should provide, and how existing methods match this ideal.

Unfortunately what is ideal for one organisation may not be so far away and different applications within the same organisation may call for different approaches. It seems likely that there will be many "ideals" depending on circumstances. Certainly there is no shortage of methods. About 80 have been identified so far and doubtless there are more. Some of these are likely to be more closely related to development activities outside the design area, particularly to requirements analysis, and some cover other areas as well as design.

While much work has been done on the development of methods, guidance on the selection of an appropriate method is rather more scarce. To help in such an assessment, questionnaires are being prepared to which participants will be able to indicate their needs of a design method and also their experience in the use of any method, whether proprietary, publicly available, their own, or some combination of these. Similarly vendors of methods will be able to indicate the attributes of their particular approaches.

If any readers would like to participate in the study, I will be happy to provide further information. The findings will be given to those who take part.

G. LONGWORTH
Senior Consultant
DP Methods Division
National Computing Centre
Mancaster.

Forum for Unix users

I WOULD like to invite your readers to the inaugural meeting of /usr/group/UK, which will be held on Friday, May 13, at 10.30am at NCR, 206 Marylebone Road, London, NW1. To cover administrative costs, a £5 admission charge will be made.

The group will provide a forum for Unix users, software suppliers and manufacturers of Unix-based hardware in the UK to discuss matters of mutual interest. These will primarily revolve round commercial matters.

/usr/group/UK will be an official chapter of /usr/group/International and has been formed as a result of strong pressure from Unix users.

I look forward to welcoming anyone with an interest in commercial aspects of Unix to this meeting.

A. J. LAZZERINI
/usr/group/UK

Flexus Computers
Langley Mill
Notts.

No manual

J. P. BENNETT's letter (Computer Weekly, April 14) on the article "Invitation to Forth" suggested that Acornsoft's Forth should not have been omitted as it is "one of the most powerful versions on the UK market".

Though this may be true it is an entirely unsupported assertion as, though the tape has been sent out, no manual is available and it is impossible to use the tape without it.

C. W. MARTIN
Sheffield University.

Sharing of experience

ONE of our recent issues carried an advertisement for IALIS, a range of factory data processing equipment, indicating that many manufacturing companies were slow to automate their production control but were forging ahead with plans for office automation. This may be the case with the larger firms typical of CMC's prospects but across the business community as a whole, office automation appears not to be so well established.

The various suppliers of hardware set out an impressive showcase of their products in every medium from the trade Press to peak-time television. What is missing for most business customers is some general perspective of how all this new hardware relates to their business and to their needs, and we will take it from there.

G. L. STEPHENS
OFT Publicity Officer
Chalfont Software Services
10 Linfield
Little Chalfont
Amersham, Bucks.

Privacy Bill campaign

THE Computer Law Committee of the Society of Conservative Lawyers has severely criticised certain aspects of the Data Protection Bill which is going into its committee stage in the House of Commons.

In my capacity as chairman of the committee, I have received a note from the Home Office saying that the government is prepared to consider widening the exemptions from registration (and therefore the ambit of the Bill) if categories of harmless data can be satisfactorily defined.

We would be interested in hearing from your readers with their thoughts on the data, or data users, who should be exempt from the Bill as we are co-ordinating a campaign to persuade the government to widen the exemptions. In our view it is quite inappropriate for the Bill to apply to the great mass of enterprises whose collections of data are merely straightforward ones to run their business with no intention of divulging that data to outside parties.

RODNEY HYLTON-POTTS
27 Chancery Lane
London WC2A 1MT.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

Babbage Institute

YOUR note (Computer Weekly, April 7) on the appointment of Dale Johnson as associate director of the Charles Babbage Institute doesn't do justice to the founder of that body. This was Erwin Tonness, president of Data Products Corporation. The first issue of the Institute's Newsletter (Vol 1 No 1 May 1, 1979) says: "Feeling that there was a need to be met [to document the history of the 'information revolution'] Erwin Tonness founded the Charles Babbage Institute in late 1977, providing \$150,000 of seed money. Continued funding will come from private sources, both individuals and organisations."

Membership costs only £5 per year and a free information pack is available. If any of your readers would like to know more about OFIX, all they need do is send their business card or letterhead to me and we will take it from there.

JACK HOWLETT
Oxford.

York's Prolog

YOU describe the York portable Prolog system as a commercial product (Computer Weekly, March 3). To avoid misunderstanding, I should like to clarify the basis on which it is to be distributed.

The system was developed as a research tool, and we are making it more widely available in the belief that doing so will benefit the academic and industrial research community. Unfortunately, lack of resources prevents us from offering formal support.

The portable Prolog system is based on an interpreter written in a portable subset of standard Pascal, and has been run on over 15 different machines. Further details are available from Maureen Bulmer in the Department of Computer Science, University of York.

J. M. SPIVEY
University of York.

COMPEC EUROPE '83

CENTRE INTERNATIONAL
ROGIER BRUSSELS
MAY 3-5 1983

See all the latest advances in computer equipment and services.

For commercial and industrial end users, computer specialists, OEM traders, consultants and suppliers of computer systems and services Compec Europe '83 provides an ideal opportunity to see and examine a full range of equipment - small business systems - mini and microcomputers - peripherals and software.

This year's exhibition is the largest ever with an even greater number of exhibitors, and sees a major expansion to account micros, software and CAD/CAM.

Open Tuesday May 3 10.00 - 18.00 hrs
Wednesday May 4 10.00 - 20.00 hrs
Thursday May 5 10.00 - 18.00 hrs

Entrance to the exhibition is by business registration on a ticket which is *FREE if obtained in advance or 250 BFR if obtained at the door.

Compec Europe is presented by Computer Weekly in association with Ecopress.

*For your free advance tickets fill in the coupon below-

COMPEC EUROPE '83

Compec Europe '83 Tickets.
Read Exhibitors
Surrey House,
170 Weymouth Way,
Sutton, Surrey
SM1 4QQ, UK

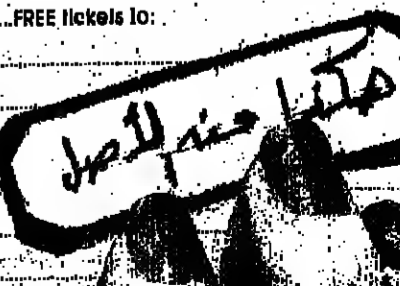
Please send.....FREE tickets to:

Name

Job Title

Company

Address



New Tandem will take the Girobank's strain

CHAMPAGNE corks were popping last week at Tandem, the US-owned world leader in failsafe computer systems. The company had just signed a £4 million contract with the National Girobank for the larger part of a new and long overdue banking system to replace an existing ICL DME set-up.

Tandem is supplying four of its NonStop computers: two at the bank's head office and one each at the regional offices in Liverpool and Birmingham. The Tandem machines will process the accounts in the regional offices, and will be linked to the central mainframe in Booter.

Girobank has long needed a better system to cope with the 5,000 new accounts each week. The present one is still based on the original system set up when the bank was formed by the Post Office in 1968.

Since then the bank has introduced bank accounts with personal loans among other facilities, and

has seized a total of over a million personal and business accounts from the big four banks.

The banking software that keeps ledgers and updates accounts is having to be completely rewritten to take advantage of the new



NIX...deluged.

operating systems and communications facilities. But particularly important, says Jim Nix, systems project manager, is that the new system will be structured properly.

The development team is deluged with requests for new banking facilities, all of which have to be implemented on the computer before being released to customers. The present software, says Nix, is now too convoluted to allow quick enhancement.

All Girobank transactions are processed at the headquarters in Booter. The Post Office acts as branches, but simply send cheques cashed and deposits made to the Girobank for processing.

There are 20,000 post offices, giving the Girobank more branches than the rest of the big banks put together. This has so far made it impossible to link all post offices to the Girobank computer.

But four post offices are involved in a pilot scheme with a £300,000 grant from the Depart-

ment of Industry, to experiment with counter terminals.

"The money for this runs out at the end of this year, so there will be a post mortem," says Nix.

Office automation is also central to the Girobank's plans, and several different systems are being evaluated at present.

But the most interesting work is being done with equipment from Office Technology, a sister company of CTL, one of the tenderers for the main systems contract. This equipment allows text and speech to be recorded and transmitted, as well as enabling office diaries to be kept for inspection at any of the terminals.

"OTL's was the most advanced equipment available at the time," enthuses systems development manager Don Levin.

The Girobank is working with the software consultancy A. D. Little on development of internal electronic communications network with circuits shared by text

data and speech.



Girobank...new systems in the offing.

Who pays best — large or small installations?

WHICH pays the best: a large installation with processors at different sites, or a small microcomputer user? The answer seems to depend on what job you are doing, if the results of a recent survey made by Surrey-based Computer Economics are to be believed.

Computer managers, shift leaders, and to a lesser extent operators seem to fare much better at large than small installations. For programmers and systems analysts the installation size is unrelated to pay.

No surprise here. Managers at larger installations are likely to have more responsibility and more people reporting to them than their brethren at smaller sites.

Similar operators of large machines need to know what they are doing more than those with just one microcomputer to mind.

But programmers and analysts tend to work in teams of similar size at big and small installations.

The survey was based on the November 1982 salaries of 31,000 people at 491 installations. The results give us the salaries of 29 job categories at four different sizes of installation expressed as a percentage of average for the category.

Unfortunately Computer Economics would not divulge the actual salary figures. But we give a sample of six job categories, which makes interesting reading for those admirers of the sausage machine of statistics.

Job title	group 1	group 2	group 3	group 4
Data processing manager	81	96	106	131
Operations manager	84	94	108	130
Systems analyst	94	96	103	100
Programmer	96	97	102	103
Shift leader	78	91	102	121
Operator	84	93	100	114

THE table shows average salaries of six different job categories at four different sizes of installation, expressed as a percentage of the overall average for each job category. Group 1 is small installations, typically a microcomputer with local terminal network. Group 2 is typically a multiple processor or mainframe with a limited online terminal network. Group 3 is a large installation with mainframes at different sites, possibly linked, and an extensive online terminal network with database. Group 4 is a group of large centres containing several multiple processor mainframe systems linked together with online database and big terminal network.

Where are VDU operators?

IS there such a thing as a professional VDU operator? It seems that such a breed is rare, at least in Plymouth, where the Health Authority tried to recruit people to help computerise 280,000 patient medical records.

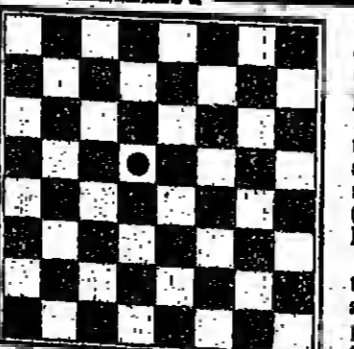
So indeed the authority hired 12 part-timers for the tedious work of copying from manual files into a microcomputer driven by software from British Medical Systems.

And the results were astounding, says the authority.

The workers were divided into two teams of six for a morning and afternoon shift each of four hours with two 15 minute breaks.

In this way 2,000 records a day were converted. By the time the work was complete, there were only six of the original 12 left, and yet the work was being done faster than ever.

PUZZLER



THIS diagram represents a chessboard with two discs placed on central squares. The problem is to put 14 more discs on 14 other squares, in such a way that no three of the 16 occupied squares lie on the same horizontal rank (eight squares), vertical file (eight squares), or diagonal (of any length).

Clearly, the six squares flanking the two existing discs are immediately ruled out as possible sites for placement. See page 55 for solution.



David Jeffrey has been appointed services manager at Microserve. He was previously UK service manager at Commodore Business Machines having spent 12 years at Rank Xerox before that.

Bob Woods has joined the newly-formed Koogberg Systems Technology as sales manager. He went to the Koogberg Group in 1982 from Philips, where he was a sales executive.

Electronic components distributor VSI Electronics UK has appointed Richard Rickard as operations director. He was previously the company's operations manager.

Gerry Richings has been appointed director of training at BIS Applied Systems. For the last five years he has been responsible for regional development at BIS, establishing two new offices during this time.



David Musson has been appointed head of marketing at Prestel. Previously residential services manager for Prestel, he has worked in British Telecom's viewdata service for eight years.

Crown Computer Services has appointed two directors to the board. They are Vic Jaffa, general manager, who has been with the company since its inception in 1981, and Kevin Kelly, market development manager of Beaufort Computer Services, who is currently responsible for directing and co-ordinating the marketing developments of that company and Crown Computer Services.

Goold SEL has expanded its field sales force in South-east England with the appointment of two sales executives. Ian Boyd, formerly with Geisico, will cover the Berkshire area; and Steve Nutt, previously with Burroughs Machines, will cover the South-western quarter of South-east England.

Brian Iverson, formerly head of publicity and promotions with ICL, has joined DBA Computer Services as marketing director.

John Penrose, who was at Hewlett-Packard for 20 years, latterly as group finance manager, has been appointed financial director at CPU Computers.

DIARY

MAY 2
Visit to Future Technology Ltd. BCS Glasgow microcomputer sub-group. Details from W. Jack on (041) 552 4400, ext 3615.

MAY 4
Computer revolution — when will it begin? Branch AGM. IDPM Central London branch. Altergo, Imperial House, 15-19 Kingsway, London WC2. 6.00.

How to choose a micro. IDPM Sussex branch. Town Hall, Market Square, Horsham. 7.00.

MAY 5
The work of the National Computer Centre. Branch AGM. IDPM Birmingham branch. New Imperial Hotel, Temple Street, Birmingham. 7.30.

CONFERENCES

KNOWLEDGE-based expert systems have been in the limelight lately, and the Japanese fifth generation computer project can take some of the credit for this. Hexadecimal Press is aiming to cater for the growing interest in the subject with a short seminar focusing on the practical skills needed to build expert systems. Speakers are practitioners who know the techniques and pitfalls involved in designing such software. Several currently operational expert systems will be analysed and demonstrated. UK venue is Middlesex Polytechnic. It will be held on June 22 and the fee is £64. Details: Hexadecimal Press, 23 Torrington Gardens, London N11 2AB.

DATA Training is to hold its IBM Cobol programming courses, which include JCL, in Manchester from August 30-September 30, and in London from May 23-June 24. There are further London courses in July and August. Each course lasts five weeks and costs £1,205. It is designed to train new entrants into the data processing field to program IBM mainframe computers using the Cobol language. The training is essentially practical with programming exercises, such as the writing and testing of fairly complex programs. Further details from Philip Corker on 01-404 5444.

COURSES being organised by Compower during May include Fortran, Basic under VSPC and Basic APL Language. Fortran, which costs £415 introduces the VSI Fortran language, describing how to write programs covering a wide range of applications. Basic under VSPC, which costs £365, is a foundation course. Basic APL language, with a fee of £415, is intended to provide an introduction to the VSI APL system under CMS. All courses are held in Cannock, Staffs. Details: Cannock 2511.

Winner of the Langton/HIM IT Year essay awards, Ivan Newman, of Burroughs Machines City branch, received his prize, an ICL personal computer, at the prize-giving at the ICL offices in London. The theme was Managing the Office in 1992. Second prize, a BBC Acorn computer, went to Michael Hird, of Glaxo Holdings; and third prize, a Sinclair Spectrum micro, was awarded to Ian Andrews, of Smith International (North Sea).

Newbury Data Recording has promoted Joe Osborne from Cambridge area sales manager to Southern region sales manager. He joined the company from Flexidata as a service engineer in 1974.

Dave Rusden has been appointed director of TLR Computer Consultants and TLR Software. He joined the group at the beginning of last year as a senior consultant.

Cotswold Computer Services has appointed Allister Morris as sales representative. He was previously with ITT Business Systems.

The Bracknell division of Ferranti Computer Systems has appointed Commander Robert Forsyth as naval sales manager. He has been a senior sales executive with the company's naval sales team for the last 20 months.



Atari Home Computers Division announces the appointment of the following: Peter Hradek (left), 35, joins as product marketing manager, having worked over 10 years at Atari; Martin Walker (right), 30, who joins as training manager, worked for the last 14 years for ICL and Rank Xerox and latterly for Harris Systems as marketing support manager; for Harris Systems as marketing support manager; for Harris Systems as marketing support manager; for Harris Systems as marketing support manager.

Norrie Hill, the Camberley-based CAD company, has named Bill White as marketing manager. He was previously in sales and marketing at Hewlett-Packard, and before that with Sinclair.

Bob Bettsworth has re-joined International group as managing director of its associated software house Fi-Cord Software. He started his career in software with Fi-Cord and later became a partner with an independent software house.

Lipman Management Resources has appointed Frank Swift customer services manager. He was previously applications support manager at Grand Metropolitan Information Services.

Exxon Office Systems has appointed Alwynne Sinclair as marketing manager, covering the West End of London and the Western Home Counties. He was previously with IBM as a salesman for its office products, joining Exxon Office Systems as a salesman in 1980.



Technical director at Enclout Systems is to be Martin Reynolds (above) who is 28. He joins from Inner Product.

TRW has the Advantage.

A company called TRW and North Star, a leading producer of desktop computers, have formed an unbeatable alliance.

As a world marketing organization for high technology products, TRW Datacom helps shape the future by building distribution channels for the best systems from the best sources. Now we're putting the full strength of our experience worldwide behind North Star ADVANTAGE and HORIZON systems.

Both models put computer technology to individual use. The ADVANTAGE offers organizations large and small a local area network system with 8 and 16 bit processors, advanced graphics, and a full selection of business

software. While HORIZON is the perfect, low cost multi-user micro. Most importantly, the reliability and performance of all North Star products have been demonstrated repeatedly in every industry environment.

North Star and TRW — outstanding desktop computer systems, backed by a powerful sales, service and support network.

North Star computers are available worldwide. For the name of your local distributor, contact TRW House, 15 Victoria Street, Windsor, Berks, SL4 8BS, United Kingdom. Telephone: 44 (07535) 59183, Telex: (851) 847429

TRW

TRW Datacom International



New distributor inquiries are invited

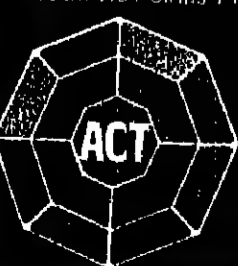
©1983 TRW Inc. TRW is the name and mark of TRW Inc. The North Star HORIZON is a registered trademark of North Star Computers, Inc.

SIMPLY MORE SOFTWARE

We felt it was time we stopped telling you about ourselves and said a few words about the massive commitment which over 100 software organisations have made to the ACT Series 1.

On this page are just a few of more than 400 packages now available for the Series 1. The packages range from traditional accounts programs to sophisticated computer-aided design systems, and there is a whole host of software for specific industries and professions.

If you're looking for a computer solution to match your business requirements, then phone one of the numbers above, before you look any further. They're all convinced that the ACT Series 1 is the best machine of its kind in the country — and they have the software that will make it work for you. And if you don't see what you want, just clip the coupon for details of more than 400 products designed for the ACT Series 1.



ACT (Series) Ltd.
100 Finsbury Park, London N3 3AF
021 501 2284

SCOTLAND'S PREMIER PROFESSIONAL COMPUTERS, SYSTEMS, PERIPHERALS AND SOFTWARE SHOW AT GLASGOW'S PREMIER VENUE...

COMPEC SCOTLAND '83

Kelvin Hall, Glasgow. May 17-19, 1983.

If you use or plan to use a computer in your work—make a date to visit COMPEC SCOTLAND '83 the show for serious computer users and DP professionals.

Today, all professional people need to keep abreast of developments in computing.

In response to this need Computer Weekly, the industry's leading newspaper sponsors COMPEC SCOTLAND. Visitor reaction to the first show last year was excellent. This year even more exhibitors will be offering you the opportunity to meet and discuss with the experts your requirements covering the industry's total range of mini- and micro-computers, small business systems, software, printers, terminals, other peripherals, telecommunications equipment, word processors—and all ancillary services and equipment available.

Opening times are: Tuesday May 17, 10am-6pm
Wednesday May 18, 10am-6pm
Thursday May 19, 10am-4.30pm

Apply now for your Free Advance Registration tickets.

AS A DECISION MAKER YOU CAN'T AFFORD TO MISS

Please send . . . FREE advance registration tickets for

COMPEC SCOTLAND '83 to:

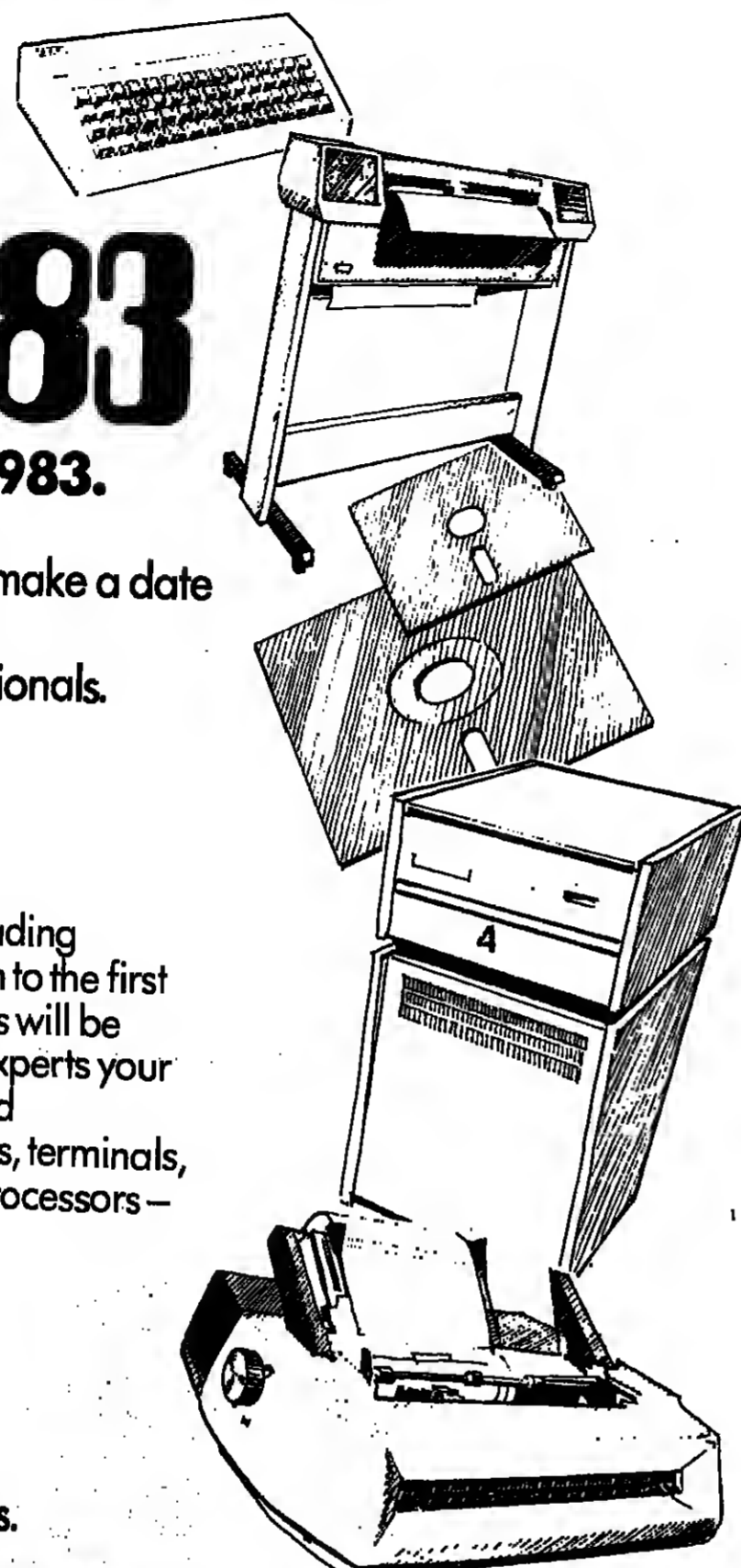
Name _____
Job Title _____
Company _____
Address _____

Return to: Compec Scotland '83 Tickets, Reed Exhibitions, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ.

COMPEC SCOTLAND '83



Compec Scotland is a Computer Weekly exhibition co-sponsored by Systems International, Computer Talk, Software and Practical Computing, and is organised by Reed Exhibitions, all members of Business Press International Ltd.



COMPEC EUROPE PREVIEW

The European market is becoming increasingly important for Japanese and US manufacturers in information technology. The European Community does not want to remain an idle spectator and has launched its own initiative into research and development called Esprit.

An interview with Christopher Layton, one of the driving forces behind Esprit, appears on this page together with an examination of the CAD/CAM market. The next pages concentrate on the broader market and Compec Europe which starts next week at the Centre International Rogier in Brussels.

Europe responds to the Japanese challenge

The European information technology market will be boosted by the announcement of the EECs Esprit programme. Boris Sedacca talks to Christopher Layton, an EEC consultant about the programme

ACTION by the European Commission to promote the community's computer and telecommunications industries has begun to gather momentum with the launch of the European Strategic Programme for Research in Information Technology (Esprit).

In the UK, the British government has set up the Alvey Committee which has called for a UK research and development programme in response to Japan's ambitious "Fifth Generation" computer project.

Alvey concentrates on information processing whereas Esprit addresses the whole area of office automation and flexible manufacturing.

While research and development have been the initial focus of Esprit, it is now clear that the programme forms part of a broader strategic plan for market development of the European electronics and information technology industries.

The European Commission is

currently reflecting on the broader strategic task for a European response to the American and Japanese challenge, and from the start this included the development of a European Commission, a position which placed him one level down from Industry Commissioner Viscount Davignon.

Layton, who spent 10 years working for the EEC, is still a highly placed consultant there. In an interview with Computer Weekly, Layton said: "This will entail a lot of fresh thinking on the part of the Community. The aim is to mobilise the marketplace more effectively, by means of large-scale networks, for example."

"However, Esprit is the key to the stage at present and the rest are reflections. The full Esprit programme should be going to the council any time now and should be announced in the middle of May. One billion units of account will come from the Community and will be matched by another

billion from industry (around £1.2 billion in total).

"It was agreed that Community expenditure should be matched by an equivalent industrial expenditure. This is different from the Alvey proposals where up to 90% of some expenditures are to come from the government. The Commission takes the view that if industry is not prepared to put money in, then it cannot give proper priority to the project."

"Industry was reluctant to participate initially, but there has been a fundamental change in attitudes over the last three years by the large European companies which now recognise the threat they face."

"Philips has taken the lead in many ways because it does not have a rich government to subsidise its home market. The company's chairman has stated in the past: 'If we do not combine now, we shall cease to be among the first rank industrial nations'."

Layton will be one of the key speakers at a forthcoming conference

organised by the Policy Forecasting Unit entitled "Fifth Generation of Computers" on 25 May at the Institute of Chartered Accountants. The conference will examine the Japanese challenge and the US response to it.

"The Japanese have proved they can take away US dominance in specific sectors of information technology where they have pushed out whole ranges of products," says Layton.

The first part of the conference will examine the nature of the challenge, while the second part will concentrate on specific programmes. Other speakers will also include consultant Dr Ian MacKintosh, Dr Horst Huenke, manager for the Esprit pilot projects at the EEC, Alastair MacDonald, undersecretary of the Information



LAYTON . . . "The aim is to mobilise the marketplace more effectively."

Technology division at the Department of Industry, and Clive Sinclair.

IBM UK development director John Fairclough will also speak. "As the largest European computer manufacturer, we felt it was right to give the company the opportunity to state its position," explains Layton.

"IBM least of all needs government subsidy on research and development. Nevertheless it is a large employer in Europe, and it is an important question whether it will be prepared to share its research and development with other companies."

The reason we need Esprit is that quite obviously, individual

national projects have failed. Esprit is a great test case for the Community as it will herald the new industrial revolution.

"Information processing is seen by the Commission as a key growth area for the Community as it shifts away from agricultural issues, and within information processing, Esprit is the top priority to get through."

"However, the Commission has long said that there must be an overall strategy for Europe, including the development of markets. But market creation does not necessarily involve large expenditures because that is when incomes begin to be generated," Layton concluded.

CAD can be wonderful but too few know it

A EUROPEAN computer market forecast by International Data Corporation (IDC) clearly indicates that at present there is a low usage of Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) among manufacturers, even in those industries most likely to benefit from its introduction.

The table lists the five most likely manufacturing industry sectors to benefit from CAD/CAM usage and shows the percentage usage in each industry. Although the sample sizes are small, the results show that only 16% of companies in the engineering and car and aerospace industries currently use such systems.

Furthermore there is a tendency for such users to be larger companies. Out of 18 CAD/CAM users, 13 of them (72%) employed more than 500 people.

These results correspond closely to recent government studies on the use of CAD/CAM in industry. These studies also noted a generally low usage and a tendency towards larger companies, despite the availability of CAD/CAM systems which can run on microcomputers and which are within the budget of medium sized companies.

The problem according to IDC is making the smaller companies aware of the advantages CAD/CAM can offer them.

"One government reports states: 'Any difficulty in implementation concerns not the inherent technical capabilities of the system but rather the information gap that has to be bridged in order to make companies aware of what CAD/CAM systems can offer and the effort required to tailor commercial systems to firms' individual requirements.'"

Hence there is a clear challenge and opportunity here for vendors of CAD/CAM systems to educate and inform prospective clients about the advantages of their particular product and to tailor those systems to user requirements, concludes IDC.

The cost of minicomputer based CAD systems range from \$125,000 to \$600,000. Added OEM value typically includes the design and manufacture of tablets, digitisers, plotters, graphics terminals, workstation and peripheral controllers and software.

Hardware accounts for 90% of the cost of a CAD system, software only 10%. Workstation peripherals, including terminals and tablets, represent the largest share of hardware costs, followed by system-level peripherals like disc and tape drives, printers, plotters and digitisers. The processor, including main memory, represents the smallest portion of hardware costs, says IDC.

The rapid growth in the CAD market has been fuelled by the

development of the three-dimensional modelling software required for mechanical design applications. This market has been slower to develop partly because of the complex calculations required to manipulate 3D figures on the screen.

However, the design economies associated with CAD systems for mechanical design appear to be much greater, and the total market potential much larger, than for electronic design applications.

Processing speed and memory capacity are the major factors considered by users when selecting CAD systems. And 32-bit processors are attractive as they allow the system to define the coordinates of points on the screen with high precision, and to perform complex rotational calculations without losing accuracy. They can also support the heavy computational throughput required for these calculations.

CAD suppliers generally develop standard software packages for use with their systems; little or no customisation is done for individual customers, says IDC.

Proportion of CAD/CAM users in different manufacturing industries.

Industry	No. in sample	CAD/CAM users	%
Chemicals	17	1	6
Fabricated metal	14	3	21
Mechanical machinery	39	6	15
Electronic machinery	22	5	23
Transportation equipment	10	1	10
Subtotal	102	16	16
Other	87	2	2
TOTAL	189	18	9

LOW COST

IBM AND SNA
IBM 2270 COMPATIBLE
NETWORKS

for as little as
£815 per device

including controller with
micro interface



Please send me full details of GCS IBM2270 compatible networks.

Name _____
Position _____
Company _____
Address _____

Speed-up of computer product sales this year in West Europe

John Aczel discerns a sharp upward trend in the demand for systems

TABLE 1: BRITISH IMPORTS OF PERIPHERAL EQUIPMENT (BY MAIN SUPPLIERS)

	Jan-Jun 1982	Jan-Jun 1981
Belgium-Luxembourg	1,122	9,559
Canada	2,701	5,797
Denmark	2,516	3,462
France	11,879	36,565
Germany (West)	26,096	54,081
Ireland	7,186	17,760
Italy	15,007	29,117
Japan	12,896	34,012
Netherlands	14,345	29,712
Spain	3,652	7,516
Sweden	7,104	20,629
US	101,211	146,000

TABLE 2: BRITISH EXPORTS OF TOTAL PERIPHERAL EQUIPMENT (BY MAIN MARKETS)

	Jan-Jun 1982	Jan-Jun 1981
Belgium-Luxembourg	6,000	6,000
France	39,570	13,368
Germany (West)	40,092	91,014
Italy	21,463	46,936
Netherlands	8,226	18,060
Norway	3,411	7,212
Spain	6,705	15,559
South Africa	9,008	19,008
Sweden	8,791	18,059
Switzerland	8,258	18,059
UK	7,618	18,159
US	6,024	12,131

TABLE 3: GERMAN IMPORTS OF INPUT-OUTPUT UNITS BY MAIN SUPPLIERS (BY VALUE)

	Jan-Dec 1982	Jan-Dec 1981
Argentina	0,000	0,000
Austria	5,045	4,175
Belgium-Luxembourg	2,658	2,103
France	3,245	3,245
Ireland	10,044	12,526
Italy	13,504	5,283
Japan	32,579	34,591
Netherlands	21,450	11,501
Norway	4,521	4,521
Sweden	25,086	41,497
Switzerland	63,398	63,398
UK	128,176	118,572

TABLE 4: GERMAN EXPORTS OF INPUT-OUTPUT UNITS BY MAIN SUPPLIERS (BY VOLUME)

	Jan-Dec 1982	Jan-Dec 1981
Argentina	1,215	639
Austria	4,133	3,089
Belgium-Luxembourg	3,417	4,305
France	8,589	7,624
Ireland	11,856	6,135
Italy	32,799	27,784
Japan	90,521	47,964
Netherlands	5,228	3,301
Norway	20,763	9,838
Sweden	62,107	50,440
Switzerland	129,992	134,630
UK	15,701	8,772

TABLE 5: GERMAN EXPORTS OF INPUT-OUTPUT UNITS BY MAIN SUPPLIERS (BY VALUE)

	Jan-Dec 1982	Jan-Dec 1981
Austria	9,119	9,369
Belgium-Luxembourg	6,427	7,709
Denmark	3,124	4,399
France	2,106	2,061
Germany (West)	17,484	17,424
Italy	13,385	17,232
Netherlands	8,188	9,685
Norway	1,477	1,846
Spain	2,340	3,564
Sweden	6,077	6,246
Switzerland	5,165	5,475
UK	16,559	13,584
US	15,701	8,772

TABLE 6: GERMAN EXPORTS OF INPUT-OUTPUT UNITS BY MAIN SUPPLIERS (BY VOLUME)

	Jan-Dec 1982	Jan-Dec 1981
Austria	9,119	9,369
Belgium-Luxembourg	6,427	7,709
Denmark	3,124	4,399
France	2,106	2,061
Germany (West)	17,484	17,424
Italy	13,385	17,232
Netherlands	8,188	9,685
Norway	1,477	1,846
Spain	2,340	3,564
Sweden	6,077	6,246
Switzerland	5,165	5,475
UK	16,559	13,584
US	15,701	8,772

SALES of computer products have remained at a high level during the past 12 months and, for computer systems and peripheral equipment, the trend in demand has been sharply upward in most European countries during 1982. In this sector, the effects of the general economic recession have been limited, and, for 1983, a further speed up in the market for computers is expected, especially for the smaller systems and microcomputers.

According to estimates published in the Mackintosh Yearbook, the overall market in Western Europe for complete systems and peripheral products amounted to over £20,000 million (about £13,000 million) in 1982. Within that region, the UK, France and West Germany have accounted for a significant share of the total, representing about 50% in value terms.

The rate of growth in the various markets has varied, but the growth in the peripheral sector has been particularly rapid in most countries. And they forecast that demand will rise by at least 10% at constant prices, without taking into account the impact of inflation. This, in the current year, the overall market size could be at least £22,000 million (about £15,000 million), though this figure may be on the low side.

These forecasts, however, should be treated with some care and may be quite conservative. For one thing, Mackintosh forecasts tend to be published in constant prices, and, if one builds in a factor for inflation of at least 5% or 6%, this growth will be nearer 15% at current prices.

Mackintosh usually errs on the conservative side and, on present trends, it is likely that an average rate of expansion of over 20% at current prices will be recorded in most of the European markets.

The three major markets, France, the UK and West Germany, will be considered in turn, while some comments will also be devoted to the Netherlands. The Dutch market, relatively small, has been growing particularly fast in some sectors. It is quite a sophisticated one and has a number of special features.

In this analysis, several provisos should be made with regard to the statistical information. Some of the figures are not strictly comparable, as differences in definitions and in classification do occur in the trade statistics for each country.

Another factor of some importance concerns movements in exchange rates, and, though all the relevant statistics have been converted into sterling to make the survey easier to understand, this factor can distort comparisons to some degree.

In the official statistics, there are also problems involved in the time span for the actual trade flows, so

that exports from one country do not always match up with the imports from another.

On the whole, however, the figures contained in this survey are the best available at the moment, and should be of considerable interest to marketing executives who are keen to assess the growth for their products in various European countries.

Naturally, the computer industry is a fast moving one, and conditions can change rapidly within a short time, so that any trends in sales have to be treated with some caution.

The main emphasis will be on peripheral products which have been of particular significance in most of the European countries. As a rough estimate, peripherals accounted for about 65% of the total market, with input and output units being of particular importance. In the official statistics, the classification for input and output units covers a wide range of products, such as printers, visual display units, terminals and

imports for peripheral units amounted to over £700 million in 1982, of which a significant proportion was represented by input and output units and storage devices of various kinds.

Competition has been quite fierce in the peripheral sector, and, according to the latest estimates, prices have dropped to below £600 per unit in 1982, as against nearly £700 in the previous year. Even so, the US has continued to maintain its dominance in this market, and for the peripheral sector as a whole, accounted for about 60% of the total.

This share, however, has been challenged by other suppliers, as various countries have managed to increase their market position over the past 12 months.

In particular, imports from West Germany have been quite strong and now account for nearly 10% of total peripheral imports. There has also been a big jump in imports from Ireland, and its sales have reached £18 million during the past year.

firms have now a significant presence.

It is expected that British exports will benefit considerably from the recent fall in sterling, and higher sales are likely to be achieved during the coming year. In sterling terms, the average price of exports have gone up, but this has been largely counter-balanced by the fall in the value of the currency, so that British products are now much more competitive than they have been during the past 12 months.

So far, the growth in British exports has not been as high as expected, and Britain's trade deficit in the computer sector has been quite disappointing.

The market for computer products in West Germany is probably the largest in Western Europe, and, according to Mackintosh Consultants, was valued at over \$4,000 million (nearly £2,700 million) in 1982. The overall growth of this market has been slower than anticipated due to the deepening recession in that country, but, on a conservative basis, the increase has been around 10% for West German demand during the past 12 months.

Trade flows have played an important part in the West German market, with total imports for complete systems and peripheral units amounting to nearly £950 million in 1982. This represented a growth of 8% compared to the previous year, but there has been a considerable difference between imports of complete systems and those for peripheral units.

Thus deliveries of computer systems rose by 16% to over £380 million in 1982, while those for peripheral units increased by a more moderate amount, averaging 3% in value terms during 1982.

It is interesting to examine the trend in imports for input and output units, as they provide a useful indicator for demand in the peripheral sector as a whole. By value, these products rose by nearly 25% to just over £320 million, but in volume terms the increase has been much sharper. Thus, 393,000 input and output units came into West Germany during 1982 as against just over 300,000 in the previous year, representing a growth of 30% by volume.

This difference in growth rates has been due to the sharp fall in the price of imports. Price competition has been quite intense in the West German market, and, during 1982, the average price of a peripheral unit has dropped by about 20% to around £800.

The trend in exports for German manufacturers has been somewhat disappointing, and overall sales abroad increased by only 3% for computer products as a whole. For complete systems it dropped by 4%, whereas for peripheral units

Continued on page 19

COMPEC EUROPE '83

similar items, and it is believed that this sector provides a useful indicator of the conditions prevailing in the peripheral field as a whole.

Demand for most computer products has been at a high level in the UK, despite the prolonged effects of the recession. It is estimated that overall sales have grown by about 30% in 1982, with imported products playing a major part in the expansion of the British computer sector.

It is difficult to make comparisons for the growth in imports, due to the delay in the publication of the trade statistics for the UK in 1981. As a result of the Civil Service strike, figures about imports and exports are not readily available, but one can make some rough estimates about their growth, even though they may have to be altered when more information becomes available.

During 1982, total imports of computer systems amounted to nearly £1,200 million, a rise of 34% compared to 1981. Deliveries of complete systems and central processing units reached £476 million, which was up by 20% while the growth for peripheral units has been even higher, showing an expansion of over 40%. The value of

Considerable interest has been shown by Japanese manufacturers of peripheral equipment, and, according to latest estimates, their sales have captured 3% of total British imports.

In certain fields, Japan has been particularly effective in its sales, and its deliveries of printers have been a strong feature of the British market. Nevertheless, Japan was still a long way behind American suppliers, though it is expected that the share of Japanese products in the peripheral field will increase markedly during 1983.

Britain has been expanding its sales overseas, and its total computer exports reached over £730 million for computer systems and peripheral units during 1982. This was up by 16% compared to the previous year, and British manufacturers have placed considerable emphasis on sales to some of the Common Market countries.

In particular, sales to West Germany, France and Italy have been quite strong, and good progress has also been made in some of the smaller European countries. In addition, Britain has been exporting peripheral equipment to other regions of the world, especially to the Middle East, where British

TABLE 4: BRITISH EXPORTS OF PERIPHERAL EQUIPMENT BY PRODUCT GROUPS (BY VALUE)

	Jan-Jun 1982	Jan-Jun 1981
Disc storage units	75,127	157,393
Magnetic tape storage units	16,010	32,970
Other storage units	5,135	9,433
Printers	56,593	132,093
Readers and punches	5,925	3,072
Visual display units	81,298	170,210
Other terminals and consoles	5,186	9,072
Other peripheral units	67,163	145,691

TABLE 9: FRENCH IMPORTS OF INPUT-OUTPUT UNITS BY MAJOR SUPPLIERS (BY VALUE)

	Jan-Dec 1982	Jan-Dec 1981
Argentina	1,000	1,000
Canada	12,153	5,211
Germany (West)	17,351	10,558
Ireland	7,325	4,683
Italy	40,096	30,248
Japan	12,366	2,417
Netherlands	9,543	1,392
Sweden	1,057	14,071
UK	60,662	46,151
US	135,485	86,403

TABLE 10: FRENCH IMPORTS OF INPUT-OUTPUT UNITS BY MAJOR SUPPLIERS (BY VOLUME)

	Jan-Dec 1982	Jan-Dec 1981
Argentina	No.	No.
Canada	3,151	1,000
Germany (West)	16,012	888
Ireland	3,202	1,478
Italy	52,727	36,490
Japan	50,022	15,871
Netherlands	8,281	1,387
Sweden	16,692	1,392
UK	132,279	83,361

TABLE 11: FRENCH EXPORTS OF INPUT-OUTPUT UNITS BY MAIN MARKETS (BY VALUE)

	Jan-Dec 1982	Jan-Dec 1981
Australia	1,000	1,000
Belgium-Luxembourg	397	430
Germany (West)	6,786	4,792
Ireland	3,126	283
Italy	13,944	16,841
Japan	983	1,301
Netherlands	4,735	4,164
New Zealand	92	131
Saudi Arabia	1,179	385
South Africa	2,569	1,718
Spain	5,217	6,241
Sweden	5,519	5,249
Switzerland	35,319	32,420
UK	12,932	14,941

TABLE 12: FRENCH EXPORTS OF INPUT-OUTPUT UNITS BY MAIN MARKETS (BY VOLUME)

	Jan-Dec 1982	Jan-Dec 1981
Australia	No.	No.
Belgium-Luxembourg	370	187
Germany (West)	18,646	13,870
Ireland	5,029	658
Italy	21,529	10,396
Japan	955	1,383
Netherlands	5,222	2,356
New Zealand	108	139
Saudi Arabia	110	186
South Africa	2,092	1,662
Spain	4,019	1,797
Sweden	2,830	1,580
Switzerland	4,541	2,449
UK	40,991	35,811
US	19,025	16,791

TABLE 13: DUTCH IMPORTS OF INPUT-OUTPUT UNITS BY MAJOR SUPPLIERS (BY VALUE)

	Jan-Nov 1982	Jan-Nov 1981
Argentina	1,552	900
Austria	632	222
Belgium-Luxembourg	1,687	131
Canada	3,466	2,012
Denmark	321	325
France	5,671	5,471
Germany (West)	9,365	2,008
Ireland	520	885
Italy	9,237	8,742
Japan	4,071	2,840
Netherlands	321	103
Spain	2,987	2,800
Sweden	411	111
Switzerland	9,153	8,708
UK	33,088	24,549

TABLE 14: DUTCH EXPORTS OF INPUT-OUTPUT UNITS BY MAJOR SUPPLIERS (BY VOLUME)

	Jan-Nov 1982	Jan-Nov 1981
Argentina	395	128
Austria	1,381	109
Belgium-Luxembourg	2,862	91
Canada	2,049	951
Denmark	294	293
France	3,429	2,413
Germany (West)	17,767	11,795
Ireland	383	1,754
Italy	14,626	6,648
Japan	26,390	8,512
Netherlands	90	20
Sweden	1,680	1,225
Switzerland	636	325
UK	9,205	7,198
US	39,910	29,985

Japan strides ahead in France, Holland

From page 18

unquestionably, German manufacturers have been hindered by the high value of their currency, and this has made exporting more difficult than usual during this period.

The market for computer equipment has been growing rapidly in France over the past few years, and, according to the Mackintosh estimates, the total size reached about \$3,600 million (about £2,400 million) in 1982. About three-quarters of the total has been accounted for by peripheral products, which have been expanding fast in recent years.

During 1982, total imports of computer systems and peripherals jumped by 42% and amounted to over £740 million. Deliveries for all types of products have been on a sharply rising trend, but the main increase has consisted of peripheral equipment which has risen by over 45% to over £500 million in 1982.

The latest figures reveal that deliveries of input and output devices rose by over 50% to over £320 million, but, by number, sales have gone up by 80% to 350,000 units. Prices in this sector have come down by about 10% during 1982 and averaged £900 by the end of last year.

American suppliers have continued to dominate imports, and in 1982 deliveries from that source amounted to £135 million, which represented over 40% of the total.

This proportion has remained relatively stable over the past two years, though other countries have been stepping up their deliveries markedly, particularly Italy, the UK and West Germany. In the case of Japan, its sales have been relatively small, amounting to £12 million for input and output units, representing less than 5% of the total.

But the pattern of distribution by volume has been quite different, and in this field Japan has made strong strides. Sales have tripled and reached 50,000 units during 1982. This was 14% of total deliveries, and Japan was roughly on par with deliveries by some of the major European countries. By volume, Japan continued to be a long way behind the US, but if this growth is maintained over the next few years the gap between the two countries should close substantially in the medium term.

French exports have also risen, though not as fast as imports. Their value for all systems and peripheral products amounted to £400 million in 1982 as against less than £300 million in the previous year.

For input and output devices, French sales amounted to £150 million in 1982 as against £132 million in the previous year. By volume, however, there was a sharp rise in deliveries abroad and 145,000 such units were sold overseas, which was up by 50% compared to 1981.

A high proportion of these sales have been concentrated within the Common Market countries, and the major markets have consisted of West Germany, the UK and the Benelux countries. Outside Europe, sales have been mixed, but some progress has been made by French manufacturers in selling input and output units to South Africa, Israel and Saudi Arabia.

It is expected that France will perform better with its exports over the next 12 months, especially as the recent devaluation of the French franc will make their products cheaper, particularly in some of the key markets within the Common Market. Nevertheless, during 1982, the trade gap widened, and, for the computer sector as a whole, a deficit of over £330 million was reported for that year. This compared with around £230 million in the previous year, though it is possible that the imbalance will be smaller during the current year.

The Dutch market has been expanding fast, and, in some sectors, sales have risen much more rapidly than in other European countries. According to Mackintosh, total demand for complete systems and peripheral equipment reached \$1,300 million (about £900 million) in 1982, and a growth of around 20% is forecast for this market at constant prices.

Margaret Park takes a look at what the 13-strong UK contingent has in store for visitors to Compec Europe next week



Brian Jackson, of Future Computers, with his star exhibit for Compec Europe, the FX20 personal computer.

IBM 'thinkalike' is star of Future at Brussels exhibition

A 13-STRONG contingent is crossing the water from the UK under the auspices of the Business Equipment Trade Association, for the third Compec Europe. A spin-off from the annual London Compec, it takes place at the Centre International Roger in Brussels from May 1-3.

One of the British exhibitors is Future Computers, a two-year-old micro systems house based in Purley, Surrey, and managing director Brian Jackson said his company's star exhibit would be the new FX20 personal computer which he described enthusiastically as an IBM PC 'thinkalike'.

Distribution of the FX20 has

not begun yet, and production at the Thorn EMI plant, spawning ground also for Sinclair's Spectrum, is just underway. But according to Jackson the FX20, which he describes purely in terms of its advantages over its more famous IBM rival, has a lot going for it.

"It's much cheaper than the IBM PC at £1,875," said Jackson, "and has twice the speed and twice the memory and disc capacity with two 800K floppy discs."

The FX20 will also arrive with its own local area network, will plug in IBM bus cards and run software written for the PC.

Future Computers' machine was launched at the Which Computer? Show earlier this year and Jackson said the company had made an effort to design a computer specifically for the European business market.

Future Computers, which produces other products in the FX range such as a terminal and a networking processor, already has European distributors but looks on Compec Europe as a shop window for those not yet exposed to its products.

Plessey Microsystems is in the BETA party too, showing its range of semiconductor memories and bubble memories, plus two micros.

One of the micros, System 19, is well established in the UK, and has British Telecom as its biggest user. The other was partially launched at Compec UK last autumn as a 68000 board and memory. Known as the System 68, this machine will be presented to the US market in Brussels with the addition of input/output ports and Winchester disc storage up to 140 megabytes.

System 68 runs under the Unix operating system. System 19 on the other hand is based on multiple Z80s, runs under CP/M and uses CPNOS, an internal communications software package. British Telecom uses these in a number of applications - in directory enquiries, for example.

This is Plessey Microsystems' first visit to Compec Europe and technical author Alan North explained the decision to exhibit this year as part of a recent effort to sell direct to Europe.

Pericom Data Systems from Milton Keynes will arrive with its 7800 range of VDUs which have been selling since January 1982. The range offers high resolution graphics control and includes a new micro edition of the 7800 which, according to Steve Williams, one of the sales team, can be upgraded to become either a micro terminal, a graphics terminal or a Prestel receiver.

The 7800 range is manufactured by Pericom itself in Milton Keynes. The seven-year-old company has been to Compec Europe before but does all its Continental selling through appointed distributors.

Also in the UK team is Newcastle's Real Time Systems, the sole UK distributor for a US software company called Whitesmith. Whitesmith produces compilers in the language C which will run native on the Digital Equipment's Vax and PDP/11 under any of DEC's operating systems plus Unix versions 6 and 7.

Manchester-based Whitesmith has also produced its own complete rewrite of Unix called Idris which runs on the 8080 and 68000 processors and on the PDP/11. The next release of software, says Real Time, should see Idris available for Vax machines. At Compec Europe Real Time Systems will be pushing the C pro-

ducts rather than Idris. Effort is being conserved, said technical manager Alan Johnson, to promote Idris in the UK first.

"We have to get people used to an operating system that doesn't end with the letters 'ix'," he said.

Real Time, whose research and development has recently moved to the Isle of Man, has sold in Europe already through one distributor. But the company wants to step up European activity to the point where business will support Continental offices. The plan so far is for one in Scandinavia and another in Central Europe, probably Germany.

Another in the BETA group is Radan Computational from Salt, a CAD/CAM company. Radan will demonstrate its computer-aided draughting system Radraft, which is a two-dimensional, low-cost modular system that can be built up from one workstation to something more complex.

Also on the stand will be Radpunch, a system that prepares and verifies numerically controlled

COMPEC EUROPE '83

tapes for operating manufacturing tools. This, according to Radan's Tony Billet, is used in general engineering applications.

This is Radan's first trip to Compec Europe and, like Plessey Microsystems, the visit is part of a plan to hit the European market this year.

"We have been looking carefully at Europe," said Billet, "and have opened two German offices this year - one near Cologne and one near Hamburg."

The exhibition circuit around Europe is hotting up. A large number of exhibitors in Brussels will have come almost straight from the Hannover Fair, which ended only last week.

Commodore will have put in time at both. So will Hewlett Packard, which says all its departments will be taking part in the Brussels show. On the stand will be the larger computers, high resolution plotters, the HP personal computer, logic and protocol analysers and a range of software.

"More or less all our products will be there," said a spokeswoman from Hewlett Packard's Brussels office.

Historically Compec is largely dedicated to peripherals, so there will be a veritable swarm of companies showing every extra and add-on imaginable.

Calcomp says it will take its electrostatic plotter, digitiser and graphics display. CACI, the giant multinational software house and consultancy, is unveiling a secret present at the Analytica Workbench. Details, according to Urban Vanden Bossche, manager of CACI's Belgian operations, are still under wraps, but the product is designed to combat the age-old DP problem of devoting 70% of budgets to maintenance and repair, while only 30% goes on development.

CACI says the solution is in the hands of systems analysts. CACI will also be showing a range of its software communications facilities for micros.

"Most of our customers have more than 100 data processing staff," said Vanden Bossche, "and the sort of difficulties they encounter these days are brought about by the problem of identifying hardware needs."

Lasagne code is tastier than spaghetti code . . .

. . . but neither method is the cordon bleu, says Joe Celko

THE structured programming revolution taught that the use of the GOTO statement would lead to code that resembled a plate of spaghetti.

The only problem is that in finding this trouble spot in the old way, the structured programmers fell to see a trouble spot in the new way.

In place of the tangled web of labels and GOTO statements, structured programming converts the layer after layer of nested selection statements. This "lasagne code" is better than the "spaghetti code" of the past, but neither is terrific.

Selection statements come in several flavours, the IF-THEN flavour, the IF-THEN-ELSE flavour, and the CASE statement flavour. The first two use a Boolean expression as their control and the latter uses an integer expression.

The IF-THEN and IF-THEN-ELSE statements are very much alike, but the IF-THEN-ELSE is probably better, if you can use NULL statement, "No Op" or "Do Nothing" in your programming language.

The use of the NULL statement allows the programmer to write the equivalent of an IF-THEN using IF-THEN-ELSE NULL. This makes you think about the ELSE clause; the program does not simply fall through to the next statement.

The NULL can be replaced with error messages while debugging, or real code when you see what you forgot. This is where a lot of exception handling and error correction is done in a program.

This approach also solves the "dangling else" problem. Consider this piece of code:

```
IF p THEN IF q THEN stmt1 ELSE stmt2
```

It could be read as either:

```
IF p THEN BEGIN IF q THEN stmt1 END ELSE stmt2
```

or:

```
IF p THEN BEGIN IF q THEN stmt1 ELSE stmt2 END
```

Also, I took the second approach, and most other programming languages followed their convention that the -ELSE associates with the most recent -THEN.

The final advantage is that the program is divided into very clear modules of code. The system can build overlays for the -THEN and -ELSE clauses, since they will never be active at the same time.

The CASE statement is a fairly new tool, invented by C. A. R. Hoare. PL/I and Pascal support it, but most programming languages do not. The basic case statement picks one and only one statement from a numbered list and executes it while ignoring the rest of the list.

The control is an integer value and some provision is made for an integer value which is not an index in the list. Some implementations let the execution fall through to the next statement and some have an explicit default statement in the list.

It is really too bad that the CASE statement is so rare. The lack of it forces the programmer to write chains of nested IF-THEN-ELSE statements, like this:

```
IF (p=1) THEN stmt1 ELSE IF (p=2) THEN stmt2 ELSE IF (p=3) THEN stmt3 ELSE IF (p=4) THEN stmt4 ELSE . . .
```

Instead of the nice clear case version:

```
CASE (p) OF 1: stmt1; 2: stmt2; 3: stmt3; 4: stmt4;
```

In trying to pull off the layers of lasagne, you often must trade deep nesting for complex Boolean expressions. This can be good and bad.

The bad part is that people have a hard time with Boolean algebra - 20% or more of all bugs in coding are in Boolean expressions. Only a mathematician or a lawyer can be comfortable with complex Booleans. The good part is that compilers can optimise Boolean expressions and could give you a gain in speed.

It is clear that the clauses of an IF-THEN-ELSE statement can be swapped, if the Boolean control is negated. That is:

```
IF p THEN stmt1 ELSE stmt2; is equivalent to: IF (NOT p) THEN stmt2 ELSE stmt1;
```

I would like to conjecture that there is a normal, expected arrangement for a human being to read an IF-THEN-ELSE state-

ment, in spite of the equivalence. The most likely to be executed code should be in the -THEN clause and the exceptional or error handling code should be in the -ELSE clause. Try reading a program where the opposite arrangement was used and see if you don't agree.

Patching a program in a card-input batch system can lead to some strange code. Consider the two cards next to each other in the deck:

```
IF p THEN stmt1 ELSE stmt2; IF q THEN stmt3 ELSE stmt4;
```

The reason they are there is that the programmer duplicated the first card, and re-punched only the columns he needed to make the second card. He could have punched a single card reading:

```
IF (p OR q) THEN stmt1 ELSE stmt2;
```

He is a two-finger typist and a little lazy, so he wanted to get his patch in fast and leave. It would have been better to re-punch the whole card, since both the users and the compiler would have less of a time with it.

Other tricks, taken from the McCarthy operators in LISP, are also used by some optimising compilers. This schema:

```
IF p THEN IF q THEN stmt1 ELSE stmt2 ELSE stmt3; is equivalent to: IF (p AND q) THEN stmt1 ELSE IF q THEN stmt2 ELSE stmt3; and this schema: IF p THEN stmt1 ELSE IF q THEN stmt2 ELSE stmt3; is equivalent to: IF (p OR q) THEN stmt1 ELSE stmt2; ELSE stmt3;
```

These schemas are sometimes hard to see actual practice because one of the clauses is an implicit NULL statement hidden in an IF-THEN.

Once the levels of nesting have been flattened out a bit, then the expression can be reduced by using Boolean algebra and a little commonsense.

The Boolean algebra can be found in a book. The com-

mon sense has to come from knowledge of the code. For example, knowing if two conditions include or exclude each other can allow them to be combined or allow one to be removed.

The best approach to really tricky logic is to use a decision table. This has become a last art, but it needs to be revived. Once the decision table is set up, the programmer can optimise it and check it for contradiction and redundancy with a decision table program.

The quick way to convert the table to code is to pick one condition and use it as the control expression in an IF-THEN-ELSE statement. The two branches of the IF-THEN-ELSE statement are sub-decision tables made up of the conditions and actions for which that condition is TRUE and FALSE respectively.

This procedure is continued for each sub-table until the entire decision table has been converted in a nest of IF-THEN-ELSE statements.

The problem with this approach is that there are many ways to generate a program from a single decision table. This is a blessing in one way because it means that a decision table represents all possible valid programs. By having the decision table in the program documentation, we can re-structure the program should anything change without having to mess with horrible nested IF-THEN-ELSE statements.

The bad part is that the number of possible generated statements is huge. If there are no conditions, then you have a possible ways to pick the highest level control expression. Each of the two branches of the highest level control expression has (n-1) possible control expressions. And so on and so on.

For two conditions this is simply two possible arrangements and three conditions have 12 possible arrangements. But four conditions have 576 possible arrangements. It gets even worse as n gets bigger.

There are procedures which will provide good results most, but not all, of the time. The idea of them is pick a pivot condition which has the smallest number of "don't care" entries in it.

The generated code will use the smallest number of Boolean expressions to arrive at an action. The algorithms will not generate



also used by some optimising compilers. This schema:

```
IF p THEN IF q THEN stmt1 ELSE stmt2 ELSE stmt3; is equivalent to: IF (p AND q) THEN stmt1 ELSE IF q THEN stmt2 ELSE stmt3; and this schema: IF p THEN stmt1 ELSE IF q THEN stmt2 ELSE stmt3; is equivalent to: IF (p OR q) THEN stmt1 ELSE stmt2; ELSE stmt3;
```

These schemas are sometimes hard to see actual practice because one of the clauses is an implicit NULL statement hidden in an IF-THEN.

Once the levels of nesting have been flattened out a bit, then the expression can be reduced by using Boolean algebra and a little commonsense.

The Boolean algebra can be found in a book. The com-

mon sense has to come from knowledge of the code. For example, knowing if two conditions include or exclude each other can allow them to be combined or allow one to be removed.

The best approach to really tricky logic is to use a decision table. This has become a last art, but it needs to be revived. Once the decision table is set up, the programmer can optimise it and check it for contradiction and redundancy with a decision table program.

The quick way to convert the table to code is to pick one condition and use it as the control expression in an IF-THEN-ELSE statement. The two branches of the IF-THEN-ELSE statement are sub-decision tables made up of the conditions and actions for which that condition is TRUE and FALSE respectively.

This procedure is continued for each sub-table until the entire decision table has been converted in a nest of IF-THEN-ELSE statements.

The problem with this approach is that there are many ways to generate a program from a single decision table. This is a blessing in one way because it means that a decision table represents all possible valid programs. By having the decision table in the program documentation, we can re-structure the program should anything change without having to mess with horrible nested IF-THEN-ELSE statements.

The bad part is that the number of possible generated statements is huge. If there are no conditions, then you have a possible ways to pick the highest level control expression. Each of the two branches of the highest level control expression has (n-1) possible control expressions. And so on and so on.

For two conditions this is simply two possible arrangements and three conditions have 12 possible arrangements. But four conditions have 576 possible arrangements. It gets even worse as n gets bigger.

There are procedures which will provide good results most, but not all, of the time. The idea of them is pick a pivot condition which has the smallest number of "don't care" entries in it.

The generated code will use the smallest number of Boolean expressions to arrive at an action. The algorithms will not generate

nonsense has to come from knowledge of the code. For example, knowing if two conditions include or exclude each other can allow them to be combined or allow one to be removed.

The best approach to really tricky logic is to use a decision table. This has become a last art, but it needs to be revived. Once the decision table is set up, the programmer can optimise it and check it for contradiction and redundancy with a decision table program.

The quick way to convert the table to code is to pick one condition and use it as the control expression in an IF-THEN-ELSE statement. The two branches of the IF-THEN-ELSE statement are sub-decision tables made up of the conditions and actions for which that condition is TRUE and FALSE respectively.

This procedure is continued for each sub-table until the entire decision table has been converted in a nest of IF-THEN-ELSE statements.

The problem with this approach is that there are many ways to generate a program from a single decision table. This is a blessing in one way because it means that a decision table represents all possible valid programs. By having the decision table in the program documentation, we can re-structure the program should anything change without having to mess with horrible nested IF-THEN-ELSE statements.

The bad part is that the number of possible generated statements is huge. If there are no conditions, then you have a possible ways to pick the highest level control expression. Each of the two branches of the highest level control expression has (n-1) possible control expressions. And so on and so on.

For two conditions this is simply two possible arrangements and three conditions have 12 possible arrangements. But four conditions have 576 possible arrangements. It gets even worse as n gets bigger.

There are procedures which will provide good results most, but not all, of the time. The idea of them is pick a pivot condition which has the smallest number of "don't care" entries in it.

The generated code will use the smallest number of Boolean expressions to arrive at an action. The algorithms will not generate

nonsense has to come from knowledge of the code. For example, knowing if two conditions include or exclude each other can allow them to be combined or allow one to be removed.

The best approach to really tricky logic is to use a decision table. This has become a last art, but it needs to be revived. Once the decision table is set up, the programmer can optimise it and check it for contradiction and redundancy with a decision table program.

The quick way to convert the table to code is to pick one condition and use it as the control expression in an IF-THEN-ELSE statement. The two branches of the IF-THEN-ELSE statement are sub-decision tables made up of the conditions and actions for which that condition is TRUE and FALSE respectively.

This procedure is continued for each sub-table until the entire decision table has been converted in a nest of IF-THEN-ELSE statements.

statements which use the same control condition at each level nesting. A human being would tend to write code that way just because it would look symmetric and pleasing to the eye. Once the code has been generated, some of the other transforms can be applied to flatten it out further.

As a rule of thumb, a human being can mentally handle only five things at one time. Try and keep the lasagne down to three or fewer levels.

(a) Here is a simple decision table, where 0 means "don't care", 1 means "TRUE" and -1 means "FALSE", with conditions C1, C2 and C3, and outcomes of statements S1, S2 and S3. It can be converted to code by inspection.

	C1	C2	C3	
	+1	-1	0	1
	-1	0	+1	+1
	0	0	+1	-1
	S1	S2	S3	S4

(b) It first pivots on condition C2 to become:

THEN	C1:	0	0
	C3:	+1	-1
		S3	S4
ELSE	C1:	+1	-1
	C3:	0	0
		S1	S2

(c) and finally becomes:

IF C2 THEN IF C3 THEN S3 ELSE S4 ELSE IF C1 THEN S1 ELSE S2;

A human being might have generated this "lasagne" code from the same program specification. The reason that a human being would turn out such code is that it has a nice symmetry and the conditions appear in the order that they were identified.

That is, C1 is at the first level, C2 is at the second level and C3 is at the third level. Would you see that these two blocks of code are equivalent by inspection?

IF C1 THEN IF C2 THEN IF C3 THEN S3 ELSE S4 ELSE S1 ELSE S2;

THEN IF C3 THEN S3 ELSE S4 ELSE S2;

reprints

If you are interested in a particular article/special feature or advertisement in this journal

Have a good look at our Reprint Service!

We offer an excellent, reasonably priced service working to your own specifications to produce a valuable and prestigious addition to your promotional material (minimum order 250 copies). Telephone Michael Rogers on 01-661 3036 or complete and return the form below.

To: Michael Rogers
Computer Weekly, Room 211A
Quadrant House, Sutton, Surrey SM2 5AS

I am interested in _____ copies of article/advert.
headed _____ featured in this journal
on pages _____ issue dated _____
Please send me full details of your reprint service
by return of post.
Name _____
Company _____
Address _____
Tel. No. _____

EXPERT SYSTEMS LTD

Opportunities are now available for strongly motivated and experienced staff to join this expanding company and work in some of the most exciting and rewarding areas of computer science. The company is developing and marketing software products, undertaking project work, and writing and giving training courses. Vacancies now exist for:

PROLOG IMPLEMENTORS
preferably with experience of the internal workings of Prolog interpreters and compilers;

KNOWLEDGE ENGINEERS
preferably with experience of developing expert systems using Prolog;

MARKETING SPECIALIST
with some technical software experience, as well as good marketing skills, to tackle the UK, European, Japanese and USA markets;



Attractive salaries and pleasant conditions are offered in our newly acquired Oxford premises. Oxford itself is a delightful place in which to live, and help will be given with moving expenses where necessary.

24 Alexandra Road, Oxford OX2 0DS. Tel (0866) 242208

WARNING: COMPUTER DATA Are Your Presentations a Pain in the Neck?

We all know the problem! Too many people straining their necks to see too few monitors. The audience lose interest and your presentation, exhibition or demonstration loses its impact.

The Reflex Data Projection System was designed specifically to present computer information in a clear and effective manner to large audiences. The 20 MHz video bandwidth can handle up to 132 char/line and presents a sharp P31 green image up to 10 feet across. At Reflex we can directly interface to any computer.

So if your audience is getting a pain in the neck - why not ring us on (0734) 884611.



FOR SALE OR HIRE

reflex
the Computer Display Specialists

Reflex Limited, Wellington Industrial Estate, Basingstoke Road, Spencers Wood, Reading, RG7 1AW. Telephone: 0734 884611. Telex: 848445

Experts can't decide if the future's rosy or Orwellian

Over 700 people heard professionals' opinions at a symposium on computer culture. Howard Karten reports

ISSUES of privacy, potential mass unemployment, the future of intellectuals, and other computer-related topics were the order of the day in New York early this month, as some of the most widely-known computer experts and specialists from several disciplines gathered to discuss the effect of computers. In the process, the audience was treated to several rosy outlooks, some Orwellian nightmares, and a squabbling panel of artificial intelligences, complete with name calling and considerations of whether electric blanket controls can be said to think.

More than 700 people turned out to hear a variety of experts speak at the Symposium on Computer Culture sponsored by the New York Academy of Sciences, a non-profit making educational and cultural organisation. The academy's membership consists of more than 45,000 scientists from the US and 84 other countries, representing every scientific discipline.

Harley Shaiken, a Massachusetts Institute of Technology research fellow in the MIT program in Science, Technology and Society and adviser on automation policy to several public, private and labour organisations, observed that defining productivity as output per unit of input was too restrictive. Rather, he said, productivity should be defined as the opportunity to be productive for all who want to work.

Workplace automation can be viewed as a continuum, Shaiken believes. At one end is what he called "electronic Taylorism," after F. W. Taylor, the father of time and motion studies circa 1911. Electronic Taylorism consists of centralised command of the workplace (e.g. factory or shop floor), deskilling of workers, and increased machine pacing of workers.

At the other end are what Shaiken called human-centred systems, which are decentralised, take advantage of worker creativity, and feature optimal interaction of people and computers. Irrespective of control.

Since engineers are biased in favour of control and predictability,



New York... A cultured setting for the Symposium on Computer Culture.

ity, electronic Taylorism is not surprisingly the favoured method of management.

The not-so-obvious cost, however, is not the lost abilities of skilled workers, but increased difficulty in acquiring those skills, since eventually there is going to be no one to become apprenticed to. Removing a worker's skill and judgment from a job leads to an erosion of the quality of work life, Shaiken believes.

Fortunately, the "Taylorite era" is at an end, according to Columbia University (New York)

Professor of Industrial Engineering and UN consultant Seymour Melman. Workplace democracy is a requirement for productivity growth, Melman told delegates.

Nor will blue collar workers be the only ones to be affected. "Knowledge technology," in the form of artificially-intelligent expert systems, will soon begin to affect professionals such as doctors and lawyers.

The list of computer-based expert systems is growing almost daily, according to Stanford University's Edward Feigenbaum, pioneer in artificial intelligence and computer science. Feigenbaum, who is chairman of the Stanford Computer Science Department and author of several books in the field, observed that some current efforts in artificial intelligence are driven by the demands placed on knowledge workers in fields which are so vast and so complex, that "job excellence requires a scope of knowledge exceeding reasonable demands on human training and continuing education."

In these fields, good problem-solving requires several experts since no one person has all the needed expertise. Medicine and engineering are good examples, and in some areas, well-known expert systems, such as the Mycin diagnostic system at Stanford, have performed as well as or better than humans.

The development of expert systems is currently being impeded by the lack of really good, high-speed specialised computers. However, several countries are working to remedy this situation. Examples are the work on intelligent knowledge-based systems (IBKS) in the UK, the KIPS (Knowledge Information Processing Systems) in Japan, and work

on an advanced artificial intelligent architectures (AAIS) currently going on in the US.

Pamela McCorduck, a journalist, science writer, and Columbia University (New York) lecturer, observed that no one truly knows whether the advent of expert systems will herald a new golden age or something more sinister. In the past, mechanical amplifications of human abilities, such as electrification and motor cars have brought about wholly unforeseeable changes, she noted.

On the positive side, the advent of expert systems could make knowledge more democratic, since expert systems - unlike experts themselves - are easily replicated and accessible. Since constructing expert systems inevitably involves extensive interviewing into thought and logical processes of experts, psychologists are sure to learn more about human cognition and how people reason, McCorduck noted.

On the negative side, if knowledge is indeed power, then a monopoly on expert systems could cause an undesirable concentration of power in some hands.

Unlike many symposia on computers, which tend to draw heavily from those involved in the computer industry, this one drew from a broad spectrum of workers. NYAS spokesmen said every state in the US and some 46 foreign countries were represented. Some of the professionals who turned out for the conference were college physicists, law professor, professional negotiator, internist, and many people working in the humanities.

The later group could draw comfort from McCorduck's observation that since human beings are mythmakers, when and if artificial intelligence becomes "super-advised", there will be an upsurge of interest in magic.

panel discussing artificial intelligence and human thinking was treated to a rare display of academic antagonism. MIT's Marvin Minsky, who earlier in the afternoon delivered an address with the characteristically modest title "Why computer science is more important than anything else", labelled "idiotic" a proposal about artificial intelligence put forth by co-panelist John Searle, a University of California (Berkeley) philosophy professor.

Minsky is highly optimistic about the impact of computers on society and on the ability of humans to duplicate most processes, given complete information about how those processes function, but his scrappy attitude on the panel and later in a Press conference seemed to several of the journalists arrogant and perhaps less than collegial.

One of the points made by Searle was that although it is possible to construct a machine that "appears to think", "many people believe to be demonstrably false the proposition that computers have thought processes."

A good deal of the panel discussion seemed especially abstract or obscure - a university physics professor seated next to this reporter seemed hard-pressed to contain his laughter at the going-on. "It's a delightful fantasy world they're talking about," he noted.

Co-panelist Seymour Papert, creator of the Logo language and a colleague of Minsky's at the MIT Artificial Intelligence Lab, observed that "there will be machines that will be better at your job than you are", such as medicine, picking stocks, or the travel agent business - and that people ought rightly to be frightened about this development.

Proceedings of the symposium will be published as the Annals of The New York Academy of Sciences (2 East 63rd Street, New York, NY 10021), around December.

"We will stand in front of our machines in awe and reverence and perhaps a certain amount of fear," she prophesied. There is at least one indication, at least in the US that McCorduck may not be far off the mark - in recent years, astrology has seemed to gain in popularity and number of followers.

The audience for an afternoon

THE HIRE SPECIALISTS

for

LARGE SCREEN VIDEO PROJECTION OF COMPUTER DATA USING BARCO VISION

VIEWDATA TERMINALS BARCO DATA DISPLAY MONITORS

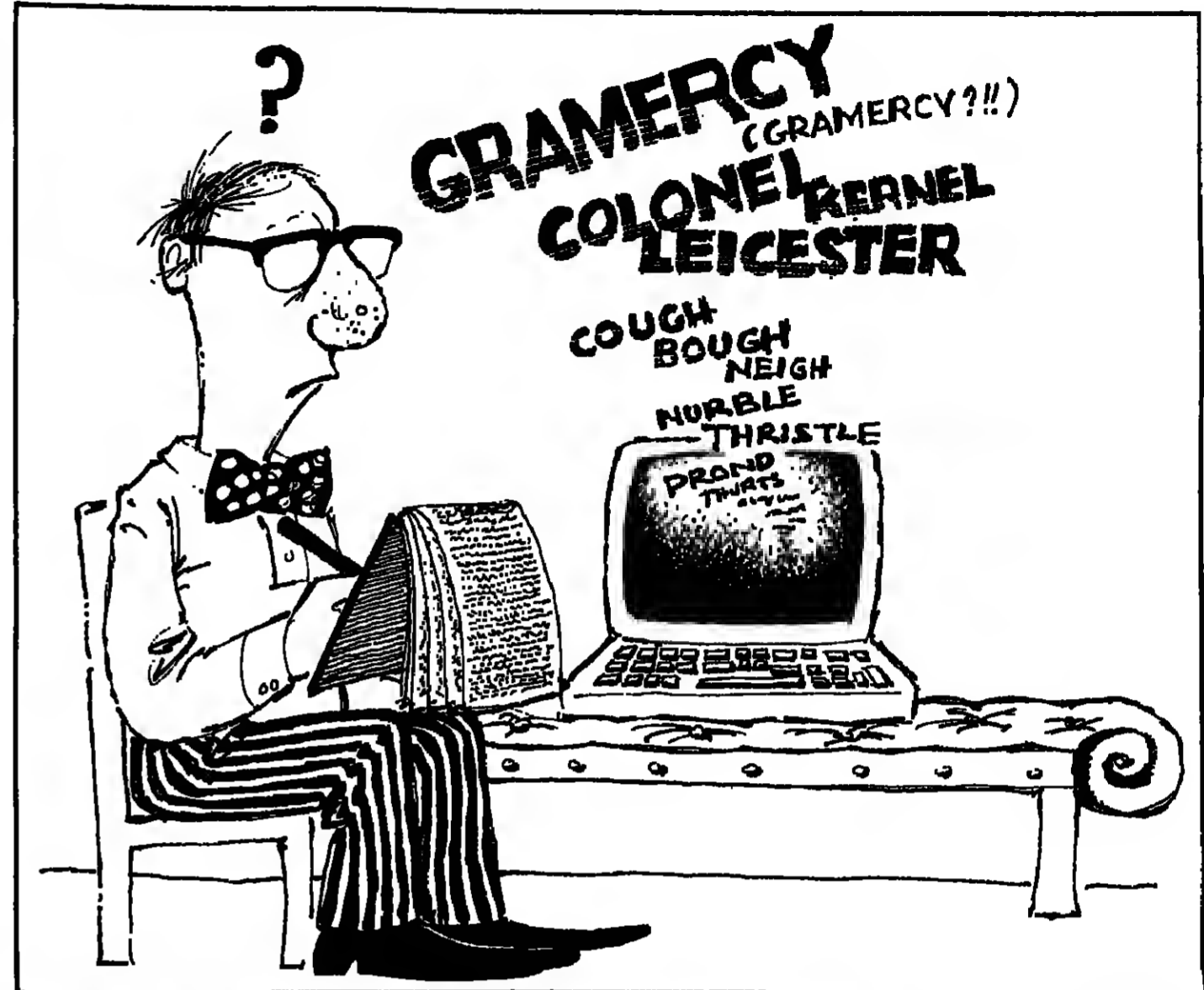
for details call

SAMUELSON SIGHT+ SOUND LTD.
Tel: 01-452 8090

ARTIFICIAL INTELLIGENCE

Can psychology help computers to understand natural language?

Do you know what "gramercy" means? Or find you can't recall a word you want to describe a particular concept? Aberdeen University's Dr Kenneth Gilhooly outlines a project to apply human psychological processes to research in artificial intelligence.



Although there are a number of theories, the question of exactly how information in the mental lexicon is structured and accessed is still open

BOTH artificial intelligence and psychology have a strong interest in natural language processing. The ultimate goal for artificial intelligence research on natural language is to develop a computer system that can act as though it understood natural language input (ideally in spoken form) and produce natural language outputs in spoken or visible form.

The goal for the psychology of language, on the other hand, is to understand how humans carry out their everyday linguistic tasks. Clearly, there is potential for some cross-fertilisation between psychology and artificial language in the language area.

I wish to outline a project involving the computer modelling of human vocabulary abilities; although the main thrust of my work is psychological, it is hoped that it may have implications for artificial intelligence and possibly some practical applications.

Hitherto, artificial intelligence efforts in this area have focused mainly on the large-scale problems of understanding continuous linguistic inputs, usually in limited environments such as "block words".

On the other hand, psychologists have given relatively more attention to the smaller scale problems of how isolated verbal inputs make contact with internal representations and lead ultimately to observable outputs (eg reading a single visually presented word aloud).

As a typical psychologist, my interests in this area have focused on these "micro" questions. However, I believe that these questions will have to be faced eventually by artificial intelligence programs for natural language processing.

If the artificial intelligence solution borrows from studies of human processes, what might it be like? To help answer this question I will briefly review the highlights of human studies in this area.

Many psychologists think that the individual's vocabulary ability is underlain by a "mental lexicon", the entries of which contain in-

formation on word spelling, pronunciation and meaning (as in real dictionaries). Being a "mental" lexicon, however, it cannot be assumed that access to one type of information (eg pronunciation) will guarantee access to other types of information (eg meaning).

An example here might be knowing that "gramercy" is a word and knowing its pronunciation but being unable to retrieve a meaning for it. Another example would be having a concept in mind but being temporarily unable to locate the phonological form of the desired word (ie the "tip-of-the-tongue" phenomenon).

Psychologists have devoted considerable research to questions of access and organisation in the mental lexicon. That there is a real problem here is perhaps indicated by estimates of the size and efficiency of the lexicon.

Reasonably well-educated adults have been estimated to know 75,000 different words and can recognise any one of them in spoken or written form very rapidly; similarly, in speech and writing, appropriate words are generally retrieved at a rapid rate. Since each word is associated with two different output codes (spoken and written) and two corresponding input codes, clearly the amount of information involved is very large.

Clues to the structure and function of the mental lexicon in humans have come from a variety of (mainly) single word tasks presented both in normal literate subjects and to brain damaged patients suffering from a range of language disorders.

The most striking evidence comes from the very specific losses of function seen in certain clinical conditions. For example, some patients display reading errors and difficulties only with long words or with words that have irregular spellings (eg "colonel"), while other patients cannot read aloud function words but can read content words; and still others have reading difficulties, not only with pronounceable non-words (eg "brone") and function words, but also with some of the abstract

content words (eg "concept").

Many other, often surprising, patterns of impairment have also been reported, eg failing to read concrete words while retaining the ability to read abstract words; retention of ability to read irregularly spelled words aloud but with

loss of comprehension of those words. These and other reports of "dissociations" of function are useful sources of evidence concerning the processing subsystems involved in normal reading.

The overall conclusion from

studies of both brain-damaged and normal subjects is that although information in the mental lexicon on word sounds, spellings and meanings is highly compartmentalised, numerous routes exist between the different forms of information. This variety of intercommunications helps the system cope with loss of some routes brought about by brain damage or disease.

Although there are a number of theories, the question of exactly how information in the mental lexicon is structured and accessed is still an open one. My current research is aimed at this question and involves developing a computer model that will embody a number of ideas in the psychological literature.

I want to see how well the model will cope with a variety of tasks when it has a large and expanding vocabulary. The main task to be tackled initially will be that of single word naming in which a phonological code is to be output given a spelled-out word as input.

A particular point of psychological interest will be whether "dissociating" different parts of the program will produce error patterns similar to those characteristic of various groups of brain-damaged humans. If so, then the underlying theory embodied in the program would be supported.

The organisation of the program will be modular. This will ease program construction and should allow for a variety of functional dissociations when simulating language disorders. Also, the incorporation of new items into the system will be made easier by a modular organisation.

"Content" information pertaining to a given word will be clearly distinguished from "address" information. At least three forms of "content" information will be stored per word, viz spelling, sound (phonology) and meaning.

The three types of information will be located in three different stores. Entry to each store will be via address codes. The address codes will be located in a number of access files.

At present, it is intended that there will be three input access files corresponding to written (graphic), phonological and internally originating semantic cues. The graphic input access file, for example, would take a spelled-out word as input and yield the addresses of corresponding entries in the phonological and semantic data stores.

The information in the three "content" stores would be as follows. The graphic code would simply be a letter code or numeric equivalent. Phonology would be coded numerically in 1:1 correspondence to the International Phonetic Association scheme. In the semantic store it is proposed to characterise each word by codes giving its syntactic status and semantic domain, followed by codes giving values on the semantic features relevant to its domain.

Once an initial set of words has been defined to the system, it may be possible to have the lexicon grow by defining new words in terms of already defined words. For example, once the system has had "small", "mountain" and "lake" defined explicitly by the programmer, it could perhaps acquire a definition of "tarn" as equalling a "small, mountain, lake".

As well as being of psychological interest as a model of human processes could this project have any foreseeable applications in the long-term? One possibility is that a version of the final system could be incorporated as a helpful thesaurus into an advanced word processing package.

For example, the semantic store could be used to generate words of similar or contrasting meanings to a given probe word.

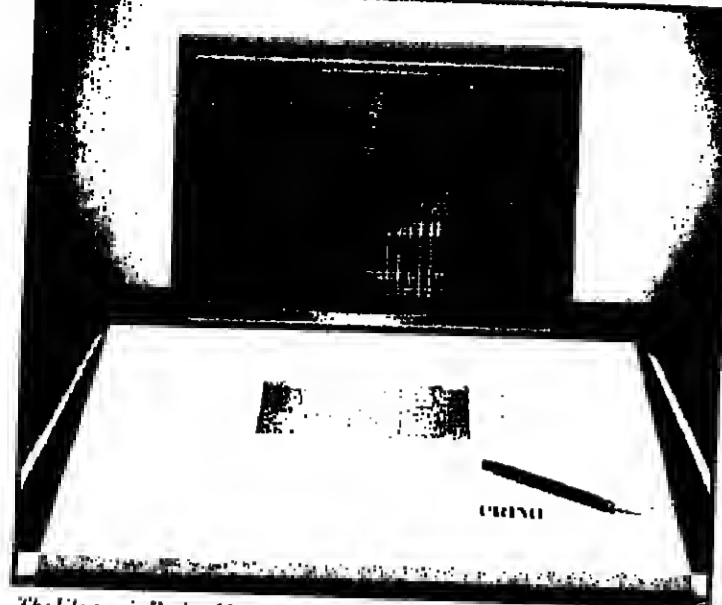
Also, a user's "tip-of-the-tongue" problems might be aided by providing the system with various relevant words (eg "small, green, hairy, exotic, juicy, fruit...") as input in an attempt to retrieve target words (eg the fruit name "kiwi").

The phonological store could be used to supply the user with rhymes or alliterations as desired.

GILHOOLY... Psychologist interested in artificial intelligence.



FEIGENBAUM... List of expert systems is growing daily.



The Electronic Design Management System from Prime Computer.

Easy-to-use system for electronic design

PRIME Computer has launched in the UK the HDMS Electronic Design Management System, described as the first computer aided engineering and design system to cover every aspect of the design of digital circuits from initial concept through analysis and simulation to final design in one integrated system.

EDMS has been designed to achieve overall improvements in product quality and costs and in the speed of the product development cycle.

It is said to be easy to use and requires no programming experience. It runs on Prime computers and colour graphics workstations and features a component library, a design database, editing, report writing, electronic design utilities plus interfaces to many commonly used CAE application software packages.

Based on Prime's database management system, DBMS, it also incorporates many controls and tools required by project managers.

To develop schematics with EDMS the engineer selects a page format and chooses components from the library. Non-graphic in-

formation can be entered through alphanumeric terminals. The interconnection pattern is entered and verified. Information from the design database plus the schematic information is automatically organised into workfiles, and when a diagram is complete all data is automatically verified before being stored in the database.

In addition to all the data management facilities for CAE, EDMS includes interfaces to link it with commonly used design and analysis software. Digital designs in EDMS can thus be easily simulated to verify feasibility and then converted into printed circuit board, wire wrap board or integrated circuit layouts without re-entering data. Final drawings can be produced and modified in a fraction of the time it would take manually.

The price of a typical configuration with EDMS software, eight graphics workstations, 24 alphanumeric terminals, a Prime 750 with four 1Mbytes of main memory and two 300 Mbyte disc drives would be £353,000.

Prime Computer (UK) (CW), Tel: (01) 572 7400.

Document and label printers

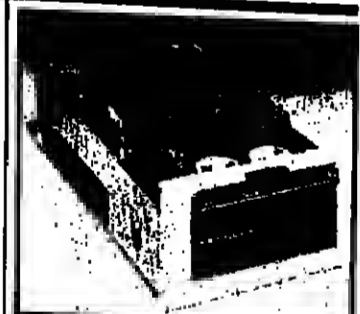
TWO high-quality, special purpose printers first shown in the UK at Compec '82, are now commercially available from Pragma. Both are made by IIR, France.

The IER 310 document printer features accurate printing on paper up to A4 size, and will automatically adjust to forms up to 2.5mm thick. Particularly suitable for handling pass-books, statements and letters, this machine also has a tally role providing blind copies as required. The nine-needle head prints a full range of characters at speeds up to 160 characters per second, and interface is either asynchronous serial (V24 or RS232C) or Centronics parallel.

The IER 320 is a special purpose, single sheet printer, intended for shelf labelling and similar operations. Its major feature is accurate bar-code printing, and the nine-needle head prints 8.5 to 10 characters per inch according to bar-code type, plus 64 ASCII characters. Documents can measure from 25 to 110mm in width, with minimum and maximum length of 60mm and 290mm respectively and an automatic cutting facility is available.

On-off list prices are £3,286 for the IER 310 and £3,841 for the IER 320.

Pragma (CW), Pragma House, Welwyn Industrial Estate, Denham Way, Rickmansworth, Hertfordshire WD3 2RL. Telephone: (0923) 720326.



The seven-track cartridge transport from Kennedy.

Seven-track cartridge transport

KENNEDY has launched the Model 6470, a seven-track cartridge tape transport designed to provide high speed back-up for 8in and 5¼in Winchester disc drives. The Model 6470 records 50 megabytes at 10,000 bpi in both the streaming and start/stop modes.

The Model 6470 represents a breakthrough in cartridge tape technology. This is the first time that a cartridge manufacturer has offered upwards compatibility between successive generations of its transports, says Kennedy. Cartridge tapes generated on the 6400-bpi Kennedy Model 6450 and 6455 drives can be read by the seven-track 10,000 bpi 6470 mechanism without need for modification or realignment of the head.

Kennedy International (CW), McGraw Hill House, Shoppenhangers Road, Maidenhead, Berks. Tel: (0628) 73939.

NCR accounts for up to 200 hotel guests

A FRONT desk accounting system called Quicksilver for use in hotels with up to 200 rooms has been released by NCR. Essentially a powerful computer programmed to operate as simply as a cash register, Quicksilver also provides vital management information, producing instant reports on room status, guest accounts and occupancy statistics.

The system comes as a free-standing terminal with full type-writer keyboard, a visual display screen, 27 programmable multi-function keys, a slip receipt and journal printer, and integrated digital cassette. Up to two local or remote cash drawers are available as options.

Quicksilver provides for the small to medium-sized hotel the same organisational and financial efficiency that until recently has only been available to large companies or multiple operations. For

around £5,900, including software, hotel managements may now benefit from complete control from check-in to check-out, says NCR.

A memory based room table holds information for up to about 200 rooms, and each room may have up to two folios attached to it.

The guest accounting function operates from registration to check-out, and is started by keying-in a room number which is automatically checked against the room table for availability. When a room is allocated, a new guest folio is headed up and the cashier indicates whether it will be the standard room rate, an adjusted one or a special arrangement.

The system has been designed so that hotel groups can use common stationery.

NCR (CW), 206 Marylebone Road, London NW1 6LY. Tel: 01-388 8244.



Office range

THE new colour co-ordinated Office range of modular office furniture and filing systems comprises interchangeable components designed to provide a variety of different system layouts to suit particular office tasks. Illustrated above is the Data Desk and smaller VDU Desk linked by a 90° connector. The new modular shelving in the background can be adapted to store printout binders, disc packs, tapes, IBM magazines and disc cartridges.

Ofrex (CW), Ofrex House, Stephen Street, London W1A 1BA. Tel: 01-636 3686.

50% saving claimed for terminal

DATA Design Techniques is marketing a microprocessor-controlled video terminal that it claims costs up to 50% less than some of the terminals it emulates.

The display is of a high quality with a monitor which has 24 geometry on all sides, 10% linearly 20MHz bandwidth, 19.2KHz horizontal frequency and low power dissipation.

The 12-inch, P31 phosphor, anti-glare screen displays 24 lines of 80 columns plus a 25th status line. Characters are formed using a TV raster scan technique and the format is 7x9 dot matrix with 9x12 resolution. Spacing of two dots between characters and five lines between rows provide a legible, crisp character.

The terminal, known as the VT-4100, incorporates full editing facilities.

Typical pricing for the VT-4100 at the quantity six to 19 level is £322. Delivery averages 30 days.

Data Design Techniques (CW), 68/70 Tewin Road, Welwyn Garden City, Herts. Tel: Welwyn Garden 34774.

PRODUCTS

Controllers offer powerful local graphics

SINTROM has launched in the UK two controllers from Raster Technologies that offer graphics system designers powerful local graphics capability as well as unique application transportability between 500 and 1,000-line graphics systems.

The first system, the Model One/20 controller, has local intelligence and advanced multiprocessing architecture to provide fast response for interactive applications. It supports up to 24 image memory planes and allows simultaneous display of more than 16 million colours. It allows a user to display a full 1024x1024 image on a low cost 512x512 line monitor and a method of dual mode image addressing provides automatic anti-aliasing.

The second system, the Model One/40, which is RS343C compatible, is designed to provide high display quality at low cost, supporting image memory configurations from 1024x1024 x 1-bit to 1024x1024 x 6 bits. It supports six memory planes and allows the simultaneous display of 64 colours from a palette of 16 million colours.

Both the Model One/40 and the Model One/20 are dual mode compatible to allow the user to interchange between lower cost, lower resolution graphics output and the higher 1024x1024 graphics quality.

Using a single command, the user can select whether to display image memory as a full 1024x1024 array or as a 512x512 window into image memory. This application

transportability between 500 and 1,000 line graphics systems means that a programmer can develop a single version of an applications software package to run with both 500 and 1,000 line monitors.

The central processors of the Model One/20 and Model One/40 are high-performance 16-bit microprocessors configured with 24 kilobytes of PROM and 32 kilobytes of user-programmable RAM. They can be used with virtually any 16 or 32-bit computer system, says Sintrom, and feature a multiple processor design to relieve the host computer from such tasks as interactive menu management, graphic input device control and other real time tasks.

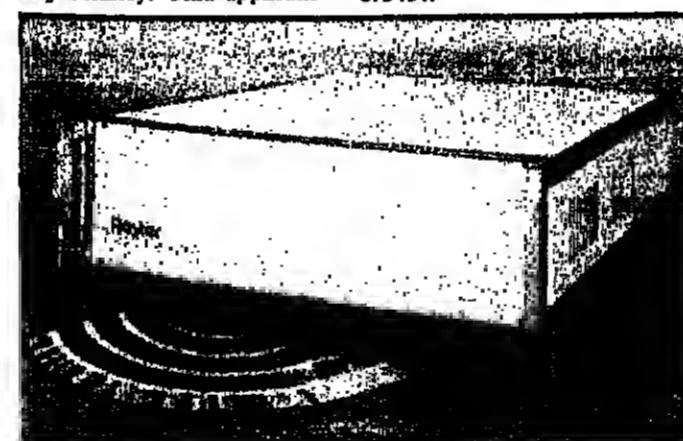
By partitioning graphics tasks between the host computer and the Model One they improve overall system performance and increase user productivity.

Both systems, which come in a 5in enclosure or mounted in a standard 19in rack, have local intelligence and can be used with a dumb terminal or work without a host computer if necessary.

They have over 100 graphic commands and integrated debugging tools to reduce application development time.

Graphics macros give easy access to local 16-bit microprocessor power using simple Fortran subroutine calls. A broad choice of interactive devices, host interfaces, and Fortran libraries are available.

Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berkshire RG2 0LS. Tel: (0734) 875464.



Raster Technologies Model One display controller.

Multi-media system plots on 44in wide film

THE 8244F multi-media electrostatic plotter, which plots on 44-inch wide film and paper, has been launched in the UK by Versatec. This allows users to make major savings by using opaque or translucent paper for economical 'quick-look' preliminary drawings and then switching to durable clear or matte finish films for overlays, duplicating and final plot production, says Versatec. The plotter is particularly suited to CAD, seismic work, mapping and business graphics.

The 8244F plots on 44-inch wide media at ½-inch (1.27cm) per second to draw 8.5 square feet per minute and plots with a resolution of 200 points per inch on film and paper. It prints 538 column lines wide at 240 lines per minute.

The 8244F plotter is priced at £37,394, and quantity and OEM discounts are available. Versatec (CW), 27/35 London Road, Newbury, Berks. Tel: (0635) 42421.

Printer developed for micro business systems

A PRINTER specifically developed for microcomputer business systems has been added to the range distributed by Datac.

The Centronics 159 has a push tractor feed with pulling friction rollers. Its five-part forms capability, variable top-of-form and forms tear-off within one inch of top-of-form make the 159 suitable for transaction document, general business and data processing applications, says Datac.

Printing at 150 cps, the Centronics 159 a standard features include 40, 80 and 132 column format, 9x7 dot matrix, expanded and compressed print, 96 character Ascii, a "clean bands" ribbon cassette, adjustable tractors and visual paper-empty detection.

The 159 is said to be compact, low-priced, fast and quiet. Datac Ltd (CW), Tudor Road, Altrincham, Cheshire, WA14 5TN. Tel: 061-941 2361.



The Datadress AP10 Automatic Addresser from Kemp Application Sales.

Turning the computer into an automatic addressing machine

ADDRESSING mail with labels has always been a time-consuming and expensive operation because of the double operation required. Kemp Application Sales claims to have overcome this problem with the introduction of the Datadress AP10 Automatic Addresser - a peripheral that is said to turn any computer in common use into an automatic addressing machine.

The Datadress AP10 is capable of direct printing up to 10,000 addresses an hour of all kinds of mailed items which need not be sorted. Further, it offers unlimited selection and will print additional information if necessary.

The direct printing operation is effected by line offset drypoint typeheads (eight maximum), which eliminate any embossing, liquid inks, spirit solvents, spray ink or wet glue. Instead, a print ribbon

runs under each of the drypoint typeheads to give a direct, clean and dry addressing operation similar to that of a typewriter.

If necessary, the Datadress AP10 printer can be supplemented by an RS10 microcomputer and the DP10 keyboard with visual display unit. These, with the Logosoft software package will provide an independent computer addressing system.

The Datadress RS/DP10 has built-in operating instructions, which make it simple to use. From the point of switch-on, all operations occur in dialogue form to guide the operator step-by-step. A protection facility guards against faulty operation - for example, stops are programmed into the system which automatically prevents double addresses from being entered.

Datadress RS/DP10 is also provided with modern access methods for changing, erasing and adding address data. This includes co-ordination with other data files, storage, versatile file control and calling of statistical information.

Automatic match coding gives every recorded address its own code with which it can be activated, so that it can be selected and if necessary brought to the display in a fraction of a second.

With the introduction of the Datadress, KAS maintains that it is now possible for the many companies with bulk mail addressing problems to exploit the modern methods of data processing.

Kemp Application Sales (CW), 46/50 Coombe Road, New Malden, Surrey KT3 4QJ. Tel: 01-942 2248.

Economic point-to-point data links

POINT-TO-POINT data communications over broadband coaxial cable networks can be achieved economically with a new RF Data Modem from 3M.

Providing a serial RS232C data link for terminals and printers, the modem, Model 925926, can be incorporated in fully loaded CATV networks with other data modems, audio modems and video distribution systems. It operates asynchronously in full or half duplex modes at up to 9,600 bits/sec. The RTS/CTS delay time is fixed at 500 microseconds.

Employing the new modem in pairs, up to 75 point-to-point, full duplex data links can be established within the spectrum of two CATV channels, with a possible total of 225 links.

3M United Kingdom (CW), 3M House, PO Box 1, Bracknell, Berks RG12 1JU. Tel: (0344) 58307.

63-key micro keyboard is launched

A LOW profile, microprocessor-based keyboard, the AKL81-042, has been introduced by Alphametric.

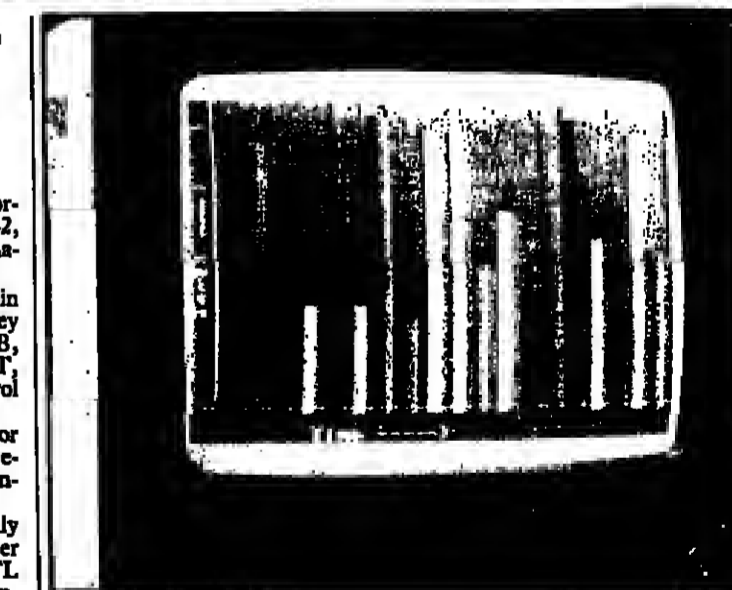
Designed and manufactured in the UK, it is a full travel, 63-key query keyboard with BCS, TAB, CAPS, LOCK, CTRL, SHIFT, DBLETS and four cursor control keys.

The on-board microprocessor gives flexibility to terminal designers. N-key rollover is a standard feature.

The new keyboard requires only a single 5V DC, 200mA power supply. Both parallel and TTL level serial data outputs are standard.

Serial data rate is 1,200 baud with a format of one start bit, eight data bits (low parity) and one stop bit.

Alphametric Keyboards (CW), Manor Way, Old Woking, Surrey. Tel: (04862) 71555.



The 14-inch colour monitor from USI International.

Colour monitor is easy on the user's eyes

A 14-INCH composite video colour monitor has been added to USI International's line of amber and green monitors.

The new monitor eliminates the two-step process of converting the computer's video signal to a form that a television can receive and the subsequent conversion within the television set back to a pure video signal. This does away with the loss of image quality that is inherent in television use with a personal computer.

Bright image presentation with low distortion is ensured through the use of high-performance components, says USI. "Characteristics are clean and crisp as are graphics and other images."

As with the company's amber and green monitors, the new colour monitor is burned-in for a full 100 hours and completely inspected prior to shipment. USI attributes the low failure rate to an extensive and stringent quality control programme.

USI provides dealer and end-user support and the company says it maintains a strong over-the-counter service.

The new monitor retails for \$399, with volume discounts available. USI Computer Products (CW), 71 Park Lane, Brisbane, CA 94005. Tel: (415) 468-4900.

CONTACT XENIA WHITE—FOR ADVERTISING RATES TELEPHONE: 01-661 8671

APPOINTMENTS

Computer Weekly
Classified Department
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AS
Surrey
SM2 5AS

Direct client sales
Telephone Manager
Shobhan Gajjar
Field Sales
Manager
Mike White
Consultancies Sales
Assistant manager
Julia Hannaford-McNelly

Regional Offices
Birmingham/Bristol
Vic Sheret
021-356 4836
Manchester/Glasgow
Owen Kelly
061-872 8881
Production
Steve Laver
01-681 3104

General copy deadline
3.30 pm Monday prior to
Thursday publication
Top Jobs deadline
4 p.m. Friday prior to
Thursday publication
Colour deadline
4 p.m. Friday prior to
Thursday publication

Rates
£31 per s.c.c.
Quarter page
Half page
Full page
Box nos. £5 extra. Address back to c/o Computer Weekly, Classified
Dept., Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS

(19cme x 3col) £1400
(19cme x 7col) £2320
(19cme x 3col) £2210
(19cme x 4col) £2700
(19cme x 7col) £4360

Telex: Comweek 882084 Bispas G

HUNTERSKILL

draws upon the experience of a Group of companies who in 13 years have together become recognised as one of Europe's leading computer staff organisations - KNIGHT COMPUTER SERVICES, H. PROGRAMMING & SYSTEMS AND HUNTERSKILL INTERNATIONAL LTD.

We have a commitment to the highest standards of performance and our reputation has been built upon our thorough understanding of the market coupled with our ability to get results. Our development comes from providing high quality service exclusively in the specialist computer staff market to installation centres of both users and manufacturers. The HUNTERSKILL Group provides staff in all areas of data processing. Our consultants co-ordinate permanent and contract assignments ranging from Management and Executive through Analysis and Programming and including all categories of Operations staff.

In recent years we have become increasingly international with representation in several countries to offer clients on-the-spot guidance and advice on how British staff can meet their requirements.

THOSE WHO JOIN US will work in an electronic office environment with full administrative support to ensure a fast and efficient service to customers and candidates alike. We provide a first class working environment and excellent facilities to assist your sales performance. The salary and commission structure is designed to be extremely generous for self motivated and hard working consultants. Within our Group are opportunities of career advancement for all successful staff.

If you would like more information regarding these positions, please contact Mrs. S. Knight, Personnel Manager on 01-491 4706 or send CV to 14 Old Park Lane, W1.

Recruitment Consultants

To continue our policy of expansion we are currently seeking additional staff in the following areas:

Operations Division: London

This division deals with Data Prep, Word Processing and Computer Operators. We are looking for a reliable person with selling experience in one of these fields. You must be able to deal with clients and candidates in an enthusiastic and professional manner.

Recruitment Division: London

You will already have experience in placing Systems & Programming personnel in permanent positions. In addition, you must be able to demonstrate the confidence and ability to sell advertising campaigns and our specialist consultancy services.

Contract Systems and Programming: London & Amersham

Sound background in a Programming and Systems contract sales environment with the ability to demonstrate initiative, drive and enthusiasm.

Programmers for IBM System 38

Kent Coast

to £10,000

A measure of a company's success is related to the high number of repeat holiday bookings received each year.

Saga Holidays PLC have achieved this by providing a high quality service to its customers and they currently sell nearly a quarter of a million holidays every year.

Their business in recent years has been further enhanced by the ability to offer information to all customers, expeditiously and reliably.

Their computer installation comprises two IBM System 38's supporting sixty terminals. They are designing a comprehensive integrated reservations and booking system, incorporating customer and marketing application areas.

To meet the ever increasing demands of their Data Processing Strategy, Saga Holidays are currently seeking to recruit three additional programmers to supplement their existing development team.

Applicants will have a background in an interactive environment, preferably with programming experience of either RPG II or RPG III. A further advantage will be a knowledge of IBM QSD hardware and software. Saga Holidays are housed in impressive offices situated in pleasant surroundings overlooking the English Channel. Successful candidates will be offered a salary of up to £10,000 per annum depending on qualifications as well as a substantial company benefits package. For further information and an early interview, contact Knight on 01-491 4706 quoting Ref: MJ/905.

SAGA HOLIDAYS PLC

Project Manager

Greater London

£13,500 neg.

- * Project Control
- * Manufacturing Systems
- * On-line Systems
- * Mini Computers
- * Systems Analysis
- * Programming
- * User Liaison at all levels

Knight
Confidential Reply

Knight

Knight Computer Services Limited

(Recruitment Division)
14 Old Park Lane, London W1Y 4NL

is a member of the Computing Services Association
Licensed as an Employment Agency.

01-491 4706
24 Hours

HUNTERSKILL
The Hunterskill Group

Head of Systems Development

New Appointment
LONDON

to £30,000, car

for a well established organisation with a worldwide household name and a turnover in excess of £1bm.

The appointee will establish strategy and plans relevant to the introduction and implementation of new computer based information systems for the group, and will manage and control a large systems development complement.

Candidates must possess proven ability to identify with the board and business management at all levels. Successful management of a large DP systems development resource is essential, and wide experience in working very closely with business management and staff in the determination of information needs and requirements is vital.

Experience in the management of systems development for a large FMCG environment would be advantageous but is not mandatory. Age Indicator is around 38.

For successful performance and achievement, career progression opportunities are outstanding.

A salary to £30,000 will be offered plus large company benefits including car.

Please write or telephone for a Personal and Professional History Form to ANTHONY SPURR, Manager, Executive Selection Division at the address below, quoting reference number G1114.

(3341)

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied Systems

The P-E Consulting Group

Park House, Egham, Surrey TW20 0HW Tel: Egham 34411

PE

Sales Executives

Computer Consultancy Services

£21K on target plus car

Our consulting work in computer systems, office automation and information technology continues to expand rapidly and we require an experienced sales executive to help grow our services further. These services include:

- feasibility studies
- policy and strategy studies
- specification, selection and implementation of systems
- project management

This opportunity is based at our Egham office and will attract those aged around 25-35.

Applicants, male or female, will have a proven track record in selling computing or related services. They will be self-motivated individuals who can demonstrate a capability in marketing and selling the services of a highly successful team of professional computer and office automation consultants. They will also have an entrepreneurial flair and be able to demonstrate sales management potential.

An excellent remuneration package is offered, including a high basic salary and commission which will yield £21,000 a year for target sales, a company car and a non-contributory pension scheme.

Please write in confidence with full CV or telephone Jan Szymankiewicz, Director, Business Modelling and Systems quoting reference EG/8MS/36

Microcomputer Software and Consultancy Services

£21K on target plus car

Having made a successful entry into microcomputer software distribution, The P-E Consulting Group seeks to appoint a highly motivated individual who will have total responsibility for the marketing and sale of its microcomputer software and consultancy services. Applicants, male or female, should be ideally aged between 25 and 35.

Candidates will need to demonstrate:

- a successful background in selling computer systems or services
 - a sound appreciation of management needs
 - an entrepreneurial flair
 - a desire for participation in a rapidly expanding business
- The benefits include a high basic salary and commission which will yield £21,000 a year for target sales, company car and a non-contributory pension scheme.

Please write in confidence with full CV or telephone Jan Szymankiewicz, Director, Business Modelling and Systems, quoting reference number EG/8MS/37

(3331)

SUPPORT SERVICES MANAGER

CIRCA 18K + Car

BERKSHIRE

Our Client is the pioneer and world leader of 32 bit minicomputer architecture. The company has grown dramatically since 1974 and its average annual growth in sales of 70% per annum is due to the innovative design of their sophisticated hardware and software. To this end they have established their international Software Development Group in Berkshire.

A senior manager is required to control the support services of this group. First and foremost he will be a proven manager, able to work under pressure, have strong liaison skills and command respect.

The responsibilities of his team will involve the day to day running of the computer centre and the provision of software services including quality assurance, documentation, software packaging and management information systems.

This senior management position attracts a generous commencing salary, company car and competitive benefits package.

For further details of this challenging and rewarding position please telephone Keith M. Taylor or write enclosing a full C.V.

MCL

McCOURT COUSINS LTD, 27-29 Greyfriars Road, Reading, Berkshire

Tel: Reading (0734) 595346 (24 hours)

App 11.50

Analyst/Programmers RPGII

International In-House Consultancy

£8-£14K West London

An exciting opportunity to join a small creative group providing solutions to a variety of application software problems throughout the international operations of a major multinational computer company.

You will have ample scope to use your experience of commercial IBM System 34 developments using RPGII.

If you have the personality and communications skill to act as advisor and consultant to users and line management throughout an international organisation this is a first-rate opportunity to grow within a progressive company.

The position involves some opportunity for international travel particularly within Europe, to provide assistance to existing computer installations in most major capital cities.

Salaries and benefits are excellent as one would expect of a major organisation and will reflect the level of experience and qualifications you can bring to the position.

To arrange an interview ring: 01-353 5605 (office hours) or at other times 01-674 8197 or 0227 710410



EXECUTIVE FACILITIES LONDON LTD
LUDGATE HOUSE
107 FLEET STREET, LONDON EC4A 3AB
01-353 5605

COBOL/CICS/DLI

City of London

Manufacturers Hanover Trust Company is the fourth largest American Bank, with headquarters in New York and facilities in 40 countries world-wide. A new international banking system is being developed here in London, in the following environment:

IBM 4300 COBOL/CICS/DLI DOS/VSE VM/CMS VSAM

Structured programming is standard. Training will be given where necessary.

SENIOR PROGRAMMER to £11,500

This position will appeal to programmers with 3-4 years' experience, who are now ready to assume some supervisory responsibility. Other responsibilities will include program design, both batch and on-line.

PROGRAMMERS to £10,000

We are looking for 1-3 years' experience of IBM COBOL. We offer challenging work in an environment where interactive program development is the norm.

The salaries indicated are enhanced by generous banking benefits, which include 5% mortgage.

If you have relevant experience please contact Chris Oakley at Manufacturers Hanover Trust Company, Queensbridge House, 60 Upper Thames Street, London EC4V 3EN. Tel: 01-600 5666 Extn: 3533.



MANUFACTURERS HANOVER TRUST COMPANY
developing the bank's

**BRIGHTON
POLYTECHNIC**
Department of Computing and
Systems

Information Technology Initiative

The department has been selected to increase its student intake to 350 places and now plans an additional 15% Computing conversion course for Humanities and Social Science graduates.

Do you have the knowledge and experience to assist others in making a good career in Computing?

2 Principal Lecturers (3-year contract) and
3 Senior Lecturer/Lecturer II posts in Commercial Computing

Applicants for the Principal Lecturer posts will have the industrial or commercial experience and knowledge to teach on an MSc Computing conversion course for Humanities and Social Science graduates.

The Senior Lecturer/Lecturer II posts require applicants with knowledge and experience at 'real world' computing to teach commercial computing and communications to computing undergraduates and diploma students.

Salary:
Principal Lecturer - £11,931-£15,018
Senior Lecturer - £10,123-£12,810
Lecturer II - £8,995-£11,022

Further details and application forms from the Deputy Head of Personnel, Brighton Polytechnic, Mouldestone, Brighton BN2 4AT. Tel: Brighton 02535 Ext 2537. Closing date May 17, 1983.

SYSTEMS PROGRAMMERS DISTRIBUTED COMPUTING

The Computing Laboratory is looking for two systems programmers to work on a small group concerned with the development of a distributed computing service. The main service computer is due to be replaced in 1983 and we want to take the opportunity at that time to provide the necessary infrastructure for the distribution of computing power as the way forward for the computing service.

Applicants should be graduates and preferably have some systems programming experience, particularly in networking protocols and technology.

One of the posts is permanent and appointment will be made at an appropriate point on one of the following scales according to age, qualifications and experience:
Range IA: £8,275-£11,105 or Range II: £10,240-£13,065

The second post is tenable for three years only. Appointment for this post will be at an appropriate point on the Range IA scale according to age, qualifications and experience.

Further particulars may be obtained from the Deputy Registrar (F.P.), The University of Kensington, 100, Kensington High Street, London W8 7AH. Tel: 01-873 1201. Applications should be sent to the Registrar, University of Kensington, 100, Kensington High Street, London W8 7AH. Tel: 01-873 1201. Please quote reference C/1.

(13428)

UNIVERSITY OF NOTTINGHAM RESEARCH ASSISTANT POSTS IN THE DEPARTMENT OF MATHEMATICS

Applications are invited for two posts attached to an SERC-funded research project to develop numerical integration methods and techniques of graphical display for Bayesian inference. The appointments will be for up to three years. Salary will be on the IA scale, £8,275-£11,105, for applicants having a PhD or equivalent research experience, or on the IB scale, £8,275-£11,105, for applicants having a Bachelor's degree. Appointments must be taken up by 1st October.

The project will require a range of skills drawn from Statistics, Numerical Analysis, Programming and Computer Graphics. A 68000 based, single user work station operating under UNIX and a high resolution colour graphics subsystem is dedicated to the project. Applications are therefore encouraged from applicants having some combination of academic and industrial experience in these fields.

For further particulars, write to: Professor A. T. M. Sills, Department of Mathematics, University of Nottingham, Nottingham NG7 2RD, or telephone 0202 50101 ext 2617. Retained letters of application including CV, names and addresses of three referees and indicating preferred position should be sent directly to Professor Sills by 15th May 1983.

(13429)

APPLICATIONS PACKAGES

SENIOR COBOL ANALYST PROGRAMMERS to £10.5K
An RSX11M/M+ SUPPORT PROGRAMMER to £10.0K

This last growing CENTRAL LONDON Software House currently employs 35 staff with a turnover of £1M per annum. They have produced integrated PRODUCTION and FINANCIAL CONTROL Software Packages, which run on a variety of MINI and MICRO computer hardware. Due to further expansion they are seeking the above staff to develop new and maintain existing products.

A MINIMUM of 2 years practical, commercial experience is essential, whilst a knowledge of DEC/DG hardware and Commercial/Production systems is desirable.

Please telephone JOHN WILLS of IMPC on 01-488 5644 for further information.



TOP JOBS FOR TOP PEOPLE
Insight Marketing & Personnel Consultants

LIBRARY SYSTEMS ANALYST

SWALCAP is a self-financing unit based at Bristol University, providing on-line book circulation and cataloguing services to a growing number of university and polytechnic libraries using two DEC VAX 11/780 computers and a network arrangement of remote Computer Automation LSI 2/20 minicomputers; over 250 terminals and other peripheral devices are currently attached to the network.

Library Analysts are responsible for liaising with libraries on all aspects of the service and defining details of new features and services. Applicants should have either library or computer qualifications, and should, ideally, have had previous experience of computer-based library systems.

The starting salary will be at an appropriate point, according to age, qualifications and experience on the scale £8,375 to £11,105.

Application should be made by letter and should include the names and addresses of three people who would be prepared to provide a reference. The letter should be accompanied by a curriculum vitae setting out details of education, qualifications, previous experience and present salary. Applications should be sent within fourteen days of the appearance of this advertisement to the Director, SWALCAP, Wille Memorial Building, University of Bristol, Queens Road, Bristol BS8 1RJ.

For additional details of the post, either write to SWALCAP or telephone on Bristol (0272) 279913.

Complete the coupon and return to:
Effectia Gravis, National House, 66
Wardour Street, London W1V 3HP, for your
next PERMANENT or CONTRACT job, or
phone 01-439 6481 (24 hrs.).

(BLOCK CAPITALS PLEASE)

Names (In full)

Address (Permanent)

Telephone: Home Office

Type of Transport Data of Birth

Current Position (Contract/Permanent)

Salary/Rate (Contract/Permanent)

Position Required (Contract/Permanent)

Salary/Rate (Contract/Permanent)

Notice Required/Data Available (delete)

Areas Preferred: First Choice

Second Choice

Experience to date: (Last Position First)

Company Name From To Duties and

and Location Mth/Year Mth/Year experience

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

DEC Financial Programmers

Surrey to £12,000

If you have a minimum of 2 years experience of programming commercial applications, preferably in BASIC + or BASIC + 2 on PDP11 under RSTS/E or VAX/VMS, then here is an opportunity to develop your career with a successful commercial software house. Our client is involved in all aspects of software production and installation and currently requires several programmers. Contact Terry Harvey.

Software Lecturers

Bucks. to £13K + car

We are seeking experienced professional lecturers to join an established and extremely well equipped training centre which functions as an integral part of our client's support organisation. It is essential to have T.P. applications experience with in-depth knowledge of data analysis. Data comms, and DBMS knowledge would be a welcome bonus. Excellent career prospects. Contact Terry Harvey.

Sen. Comms. Designer

Beds. to £15,000

If you have considerable experience of computer communications systems gained in a manufacturer's development group or with a systems house, covering software skills and hardware knowledge this could be your ideal position. You will operate across multiple projects, appraising and advising on designs and assessing implications of change on original designs and objectives. Contact Terry Harvey.

Banking, Comms.

S.E. London to £13,000

The communications centre of an international Bank requires additional programmers for the enhancement and support of their DEC and IBM Series 1, based systems. Message switching and processing is via PDP11/70 and PDP11/34 systems with Series 1 links to E.T. telex. Assembler level programming required. Attractive bank benefits include low internal mortgage, free pension and restaurant. Contact Terry Harvey.

Software Support

M'sex/B'ham to £14K + car

Take this opportunity to join one of the most successful computer companies of our time. You will need several years technical software experience to include: real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. You cannot fail to be impressed by this client. Higher salary but no car for City office location. Contact Terry Harvey.

'C' & Ass'bler Programmers

Wilts. to £10,000

Rarely does the opportunity occur to join a company of this class. It has built an international reputation for its software products in Europe, USA and Japan. We would like to hear from graduates with a minimum of one years experience who believe they can make a significant contribution using PDP/M68000 UNIX development systems. Contact Terry Harvey.

Electronics Design Engs.

Herts/Berks. £9K-£13K

We would be interested to hear from electronics engineers with experience of digital design and development techniques leading to volume production. Detailed familiarity with TTL circuits necessary, with CMOS component knowledge desirable. Some programming skill would be attractive. You will work closely with software developers. These are challenging positions with prospects for advancement. Contact Brian Coates.

Sen. Prog. Comms. Dev.

Beds. to £13,000

Any software person currently involved with communications will find the range of projects with this client wide enough to present him/her with new challenges. X.25 and L.A.N., Ethernet, electronic mail, packet switch performance monitoring, SDLC-3270 compatible products, M68000 microcode, network management, etc., etc. Positions exist for implementers and designers. Relocation assistance given. Contact Terry Harvey.

Micro Development

Camba. £9K-£11K

An important and growing application area for micro based systems is in portable data capture machines. Our client is building a team of development staff who are working on new products in this area. If you have a minimum of two years experience programming micros, or minis using assembler and a high level language and are capable of design and specification, please apply. Contact Terry Harvey.

Prime Fortran

London £10K-£12K

Several openings have arisen with this exceptionally successful company for people with 2-5 years comms. background. The duties are evenly distributed between design, development and sales support, so a good client manner is essential together with some Fortran expertise, preferably on Prima equipment. Other requirements are energy, enthusiasm and determination. Contact Brian Coates.

Comms. S/W Design

Herts. to £12,000

Develop your career and your existing communications software skills by joining a company already firmly established in this high growth sector of the computer industry. We are seeking software people with experience in developing 3270 compatible systems and as much experience as possible in X.25 and L.A.N. products. Experience in 'C' or PASCAL using M68000 and/or T19900 would be useful. Contact Terry Harvey.

Senior H/W Design Engr.

Surrey to £14,500

A well-known producer of micro computers and associated software wishes to recruit hardware design engineers with 5 years experience in the design of 8088/8086, M68000 or word processing and personal computing equipment for high-volume production, together with an electronics degree or equivalent. Less experienced applicants may be considered for middle and junior positions with the same company. Contact Brian Coates.

Comms. S/W Italy

London base to £17,000

Candidates will need to have several years comms. software design and implementation experience to advise up to project level on existing projects. The assignment calls for up to 18 months in Rome with a permanent base in London. Overseas expenses cover married couples status if required. Excellent company and long term career prospects. Contact Brian Coates.

Development Manager

Berks. to £15K + car

Ideal candidates will have mixed H/W and S/W experience gained in product design and development. You will control a small, expanding team of programmers and engineers. Development systems include Tektronix M.D.S. and PDP11 with UNIX. You will be expected to prove your technical ability and demonstrate your management awareness. Short duration visits to U.S.A. Contact Terry Harvey.

Programmers Designers

Wilts./L'don. £8K-£10K

Our client can offer extremely interesting projects in distributed processing and office systems with rewards based on merit and career advancement prospects second to none. They require technical programming experience at the micro/minis level and prefer degree level candidates. Development is done in language 'C' and PL/M-86. Candidates may opt for a Swindon or London location. Contact Terry Harvey.

Real Time Software

Hants. £10K-£15K

Major new projects involving the application of powerful superminis are being undertaken by our client. Their continuing success is due to excellence in project development techniques and control. A range of work is available to stretch your capabilities. DEC and Tandem experience would be particularly useful. Candidates must be prepared to spend time on client sites. Contact Terry Harvey.

Programmers Minis/Micros

Berks. £7K-£12K

A successful company with a product having a special place in the communications and travel industry, requires several programmers at different levels to join existing development teams. Areas of relevant expertise include Z80 Assembler, PDP11 systems, UNIX and 'C', PLZ, Viewdata, CP/M, comma and travel agency applications. Excellent benefits include special holiday discounts. Contact Brian Coates.

Tandem Comms.

N.W. M'sex. £9K-£13K

This expanding, turnkey vendor of Tandem computer systems is seeking highly motivated software people to work on advanced applications using Tandem equipment. Experience in communications and screen based applications using COBOL is required. The company has its own in-house Tandem system providing training on this very popular equipment. Candidates must be presentable. Contact Terry Harvey.

Sen. System Engineer

Herts. to £12,000

This position calls for mixed technical and project leader talents to be combined with the manner for regular client contact. Candidates will need design ability in bit slice, Z80, 8086, M68000 or similar micros on communications terminals, or interfaces in local or wide area networks. You must be prepared for regular European travel of short durations. Contact Terry Harvey.

Applications Support

N.W. H. Counties £11K + car

We are seeking a number of pre-sales support specialists to cover the area bounded by Oxford, Reading, London, Luton. The emphasis is more on business and commercial systems experience than on computing skills. Knowledge of mini based DB systems, BASIC and data comms, would be useful. This is an expanding company with an impressive record. Contact Terry Harvey.

Open letter to technical and commercial job seekers at all levels:

We are here to help you. Our free service to you is advice and counsel in identifying the most suitable position for the development of your career. Our consultants have held senior positions in the computer industry. They have the experience to understand your needs. If we do not have the position you want, we are prepared to help you find it. Why not accept this invitation to talk over your ideas with us.

Write or telephone (02403) 28383 during office hours -
we are always ready to discuss these and many other interesting positions.
Evenings and weekends only. Terry Harvey - Great Missenden (02406) 4705



H. R. Associates Limited
Free office, Computing and Technical Personnel Consultants
57a Hill Avenue, Amersham, Bucks. HP6 5BX. Tel: 02403 28383
London Office: Remond Street, WC1



02403 28383

Our vacancies stay sharp to the bottom of the page.

FREELANCE OPPORTUNITIES

SOUTHERN 0252 516141

ADF Programmers
BURROUGHS 6800/6700 Analyst/Programmers
CIS COBOL Programmers
CORAL 66 Programmers
DATAPoint Database Debus Programmer/Analyst
DEC RSTS/E BASIC + 2
DEC RSX CORAL Assembler
DG RDOS Business Basic Programmers
Hardware/Software Engineers
Honeywell DPS4 RPG II
HP3000 IMAGE COBOL QUIZ, QUICK
IBM Assembler with PL/I Analyst/Programmers
IBM DDS VSE CICS Chief Programmer
IBM DATABASE Administrator with IMS DB/DC
IBM SYSTEM Programmers
IBM 8100 DPCX or DPPX
IBM PL/I, IMS DB/DC
IBM DS COBOL Programmers
IBM COBOL with IMS DB/DC, some with ADF
IBM COBOL CICS/OLI, JSP
IBM DL1 COPIES CICS
IBM MANTIS Programmers
IBM NDMA
IBM PL/I CICS DL1
IBM SYSTEM 38 RPG III
IBM DATA MANAGER EXPERIENCE
ICL IDMS Systems Prog./Designer
ICL JSP Programmers
ICL CORAL and COBOL Programmer/Analyst
ICL CDMS Programmers with PRODCOL experience
ICL COBOL with TPMS or MTS
ICL ME29 TIME RANGE COBOL
ICL SYSTEM 25 Designer and Programmers
ICL VMEB Analysts with IDMS
ICL VMEB COBOL Programmers, some with IDMS
ICL 2900 VME Technical Support, all levels
ICL 2900 with TOTAL
ICL DMAC 29 IDMS
INTEL 8086 Programmers
INTERGRAPH AND GRAPHICS
JCL Manager Expertise
MICHAEL JACKSON structured programming
techniques with COBOL
MICRO BASIC Programmers
MICRO ASSEMBLER Programmers
TANDEM Programmers
Technical Author with DEC ASSEMBLER
Telecoms Consultant
TI990 DX10 COBOL Programmers
UNIPAY Programmers
VAX, BASIC, COBOL or FORTRAN

VAX VMS CORAL 66 and INTEL 8086
VAX SYSTEL expertise

Contact: STEVE WHITING, STEVE CASEY, PETER HOLLIDAY,
CHRIS WHETTERLY, DAVE LONKHURST, DEREK WADHAM,
SANDRA CAREY or EILEEN CARMICHAEL

MIDLANDS & NORTH 021-742 4431

DEC PDP RSX CORAL
HP3000 IMAGE VIEW QUERY RAPID
IBM/ICL COBOL plus DB, all levels
IBM 8100 DPPX
IBM Assembler CICS Programmers
IBM IMS DB/DC
IBM COBOL CICS DL1 Programmers
IBM DDS/VSE Systems Programmer
JCL VMEB IDMS end/or TPMS
ICL VME 2900 Programmers
CIS COBOL Programmers
ICL ME28 TIME Programmers
ICL ORS 20, all levels
UNIVAC DMS 1100 Technicians
IBM PL/I CICS DL1 Programmers
Manufacturing Analysts with Mainframe or Mini experience
PERMANENT Senior Operators with MVS, c. £8K,
for Birmingham
UNIVAC 1100 Database Administrators
UNIVAC 1100 Analysts/Programmers
Contact: NEIL SMITH, DAVE PARKER or KAREN LONGCROFT

OPERATORS 0252 516141

ICL GJI Operators with VMEB start June - long term
contracts
ICL 2904 Executive Operators
IBM DDS VSE JCL WRITERS
HONEYWELL Operators
PERMANENT Operators with IBM 4341 DS/VMS, JES2, TSD
and good JCL for Hants.
PERMANENT Operators with IBM 4341 DS/VS1 and
MVS JES 3 for Middlesex
PERMANENT IBM Data Controller for MVS env.
with good JCL, Hants.
Contact: ALAN PAINE or CHRIS MAGEE

OVERSEAS 0252 516141

SAUDI ARABIA
Contact: BILL EVANS
12 months' + assignments May, June
Analysts with IMS and commercial systems experience
Analyst/Programmers - PL/I preferably with COBOL, TSD,
SPF, MVS experience
Programmers - Mark IV, ADF, APL, SAS or FOCUS experience
Systems Programmers - IMS DB/DC, VTAM, MCP, MSNF or
HSM, MSS 3580 and DASD management experience

HOLLAND
Contact: BILL DORBITT
8 months' assignments commencing May, June
Programmer/Analysts - APL - MABRA experience
Systems Programmer with VTAM/NCP DBA/Systems
Designers
Office Automation Specialist with Auto Publishing
Networking Specialist with X25, TELETEXT
USA
Urgent requirements for Programmers in Chicago,
Philadelphia, Baltimore; excellent package
Expatriate required
IBM COBOL with IMS or DL1
IBM COBOL CICS/OLI
IBM COBOL with PL/I
IBM 8100 DPPX COBOL
ICL or IBM COBOL with IDMS
IBM COBOL with Adabas
UNIVAC 1100 COBOL Programmers
UNIVAC 1100 Systems Programmers
DEC PDP or VAX
DP Systems Specialist
Contact: STEVE WHITING

PERMANENT 0252 516141

Account Managers for hardware and software sales. Target
earnings £30K + benefits
Programmer/Analyst with mini COBOL and experience of soft-
ware tools, Surrey, c. £8.5K
Technical Programmer with Sartec 1 Assembler for W5,
c. £11K
Project Leader-Senior Analyst/Programmer with COBOL and
accounting systems experience, Berks., to £12K
Senior Programmer and Programmers with ICL COBOL,
preferably with VME experience, Hants., c. £8.5K
Operations Manager with IBM GSD background, Surrey,
c. £9.5K
Contact: PETER JEZEPEH or FRED BRAMLEY for an immediate
confidential interview or write, enclosing a detailed c.v.

Senior Systems Designer (up to £13,000)

and

Senior Analyst Programmer (up to £11,800)

WORKING FOR THE COMMUNITY

Bloomsbury, one of the largest Health Authorities in the Country is setting up a new Computer Team for improved patient care in the field of Genito-Urinary Medicine. This is a new development, funded by the DHSS and is being specially set up to help solve the problems of sexually transmitted diseases resulting from modern day living. The positions will be based on two nationally famous teaching hospitals - The Middlesex Hospital and University College Hospital - both in the heart of London. North East Thames RHA is looking for two people to join the team which is responsible for several highly successful patient information systems running on three networked PDP 11/70 mini-computers, a distributed database of 1250 megabytes, several microprocessors and 170 online terminal users. This is just the first stage of an ambitious project to introduce several further computers of which one will be dedicated to this system.

The people being sought must have an interest in medical computing as well as having a sound data processing background. The appointments offer the challenge of joining a new and embryonic project from which the results could have a considerable benefit to the community as a whole.

Senior Systems Designer

(NHS Scale 14) c. £11,000-c. £13,000 inclusive

You will need a minimum of 5 years experience in systems design programming and implementation of interactive systems preferably in MUMPS or BASIC. Ideally you will have a knowledge of modern data management and communications techniques. You will be required to work closely with medical staff at all levels and will be responsible for the Computer Project Manager for the success of this system.

Senior Analyst Programmer

(NHS Scale 9) c. £9,600-c. £11,800 inclusive

Around 4 years experience designing and implementing interactive computer systems is necessary. You will be working very closely with the Senior Systems Designer and other members of the District's computer team.

Both these positions offer excellent fringe benefits which include:

- ☐ Annual salary reviews and scale increments
- ☐ Good working conditions
- ☐ Pension scheme
- ☐ 22 days annual holiday
- ☐ Training and development
- ☐ Interest free season ticket loans
- ☐ Subsidised luncheon facilities
- ☐ Sports and social club on site

Please contact Ruth Grace, Computer Project Manager at UCH, for an informal chat on 011 287 9300 Ext. 114 or 115. For an application form and job description please contact: Ruth Irwin, Administrator, Regional Computer Centre, Harold Wood Hospital, Gubbins Lane, Harold Wood, Essex RM3 0BE. Tel: Inghourne 71821. Please state which position you are interested in. Closing date for completed applications: 18th May, 1983.

NORTH EAST THAMES REGIONAL HEALTH AUTHORITY

MIDLANDS SALES EXECUTIVE TERMINALS/MICROS c£25K + Car

Our client is the most successful computer rental company in the U.K., (150% increase in turnover in 1982), with offices throughout England and Scotland. It has been so successful because it has achieved a unique combination of professionalism and a happy working environment where the majority of salesmen consistently over achieve.

This may in part be due to its policy of delivering a product set to the marketplace which is chosen for its excellence. Its micros include the IBM and DEC P/C's, the ACT and ALTOS range and its terminal products include DEC, HP and TEK equipment.

To assist in the company's growth we are seeking to recruit a sales professional who is experienced and successful in the micro/terminals marketplace. He will be totally responsible for a Midlands territory and will report directly to the National Sales Manager. The position offers early opportunity for Sales Management.

For full details telephone Kevin McCourt or write enclosing a curriculum vitae.

MCL

McCOURT COUSINS LTD, 27-29 Grayfriars Road, Reading, Berkshire
Tel: Reading (0734) 595346 (24 hours)

SYSTEMS SECURITY SPECIALISTS MIDLANDS HOME COUNTIES c£20,000 plus substantial benefits

A major U.K. Systems House is expanding its capabilities to support the development and implementation of Risk Management Programs on large computer projects. Computer Systems Security Specialists are required with sound practical experience in the following areas:

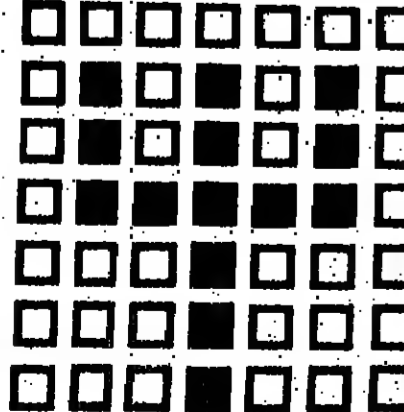
- a. Risk Analysis.
- b. Design, Development and Implementation of Computer System Safeguards.
- c. Development of Computer Systems Security Test and Evaluation Plans.
- d. Development, Implementation and evaluation of Security Tests and audits.

Candidates should have background in computer systems design, development and testing, a high level of initiative, and the ability to communicate effectively (oral and written) at all levels of ADP management.

Salary will be commensurate with experience, and is unlikely to be a limiting factor for the right candidate.

Please telephone Sandra Hersh on 01-734-7394 or send your C.V. to the address below.

**WARWICK
WOODWARD** A SPAIN GROUP COMPANY
43-44 GREAT WINDMILL STREET, LONDON W1V 7PA
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE



TRIDENT COMPUTER SERVICES PLC

WE CARE FOR OUR CONTRACTORS

TRIDENT HOUSE,
38/44 VICTORIA ROAD, FARNBOROUGH,
HANTS, GU14 7UD. Tel: 858 233
Tel: Farnborough (0252) 616141

ELMDON HOUSE,
2291 COVENTRY ROAD, SHELDON,
BIRMINGHAM B26 3PS
Tel: 021-742 4431

Licensed by the D.O.E. as an Employment Agency & Employment Business SE(B)1480

Innovative Software Professionals

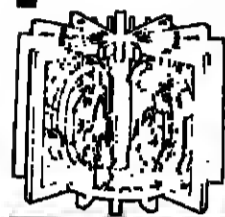
are required at:
Culham Laboratory, near Oxford, the Atomic Energy Authority's centre for research into nuclear fusion, to join a small expanding group working on a variety of novel projects. Currently, these are in the areas of software tools, interprocess communications and graphics. Most of the work is real time on a range of minicomputers using a variety of languages and up-to-date software engineering techniques.

Designers and scientific programmers with a knowledge of at least one minicomputer system (preferably UNIC, RT-11, RSX, PRIMOS or Nord Strtran) wishing to expand their experience of systems and undertake design and implementation work for challenging projects should apply to:

Mrs P Halliday, Personnel Department, Culham Laboratory, Abingdon, OXON, OX14 3DB.
Telephone No: (0235) 21840 ext 4391.

Appointments will be as Higher Scientific Officer with salary in the range of £7,320-£9,765 according to age and experience.

Applicants will require a good honours degree preferably in computer science.



Culham
Laboratory

BAHAMAS

GENEROUS TAX FREE SALARY PACKAGE
ICL SYSTEMS DESIGN

Our Client, a major multi-national corporation, wishes to recruit a number of additional systems designers, to assist with developing their series of ME29s being installed. Applicants must have had suitable relevant experience including IDMS and DDS. They should preferably be single or married without children; be self-starting; possess an outgoing personality; be keen to play an active role in a large international DP network; and be prepared to travel world wide, if required. A knowledge of insurance would be advantageous, but is not considered essential. Two to three year contracts are envisaged, with a possibility of long term permanent employment.



For further information, and a discussion in the strictest confidence, please contact C. D. Stock, General Manager, IPS Group, Lloyds Avenue House, 6 Lloyds Avenue, London EC3N 3ES, telephone 01-481 8111.

KALON LIMITED

DATA PROCESSING MANAGER

Kalon Ltd. is a leading Group of Companies which has grown fivefold over the past six years. The Group is involved in the manufacture and selling of a wide range of Surface Coatings, Chemicals and Allied Products. We are seeking a Data Processing Manager, a business orientated individual, who is technically competent and capable of leading a team of highly motivated and professional people who have over several years developed an excellent and proven track record in all facets of computing.

If you feel that you can meet this requirement, then write to Mr G. E. Moore, Group Finance Director, Kalon Ltd, 613 Bradford Road, Salford, West Yorkshire.

COMPUTER SCIENTIST

Through our subsidiary company, Robertson Research Engineering Services Limited, we have over the past few years established a leading position in geophysical offshore logging. This is the use of mobile computerised laboratories to record and evaluate formation properties found in exploration boreholes. We are now seeking to recruit a Graduate Computer Scientist to develop further our systems group and therefore facilitate the development of additional real time processing software both for use in the mobile units and at base. The ideal candidate will have a good degree in computer science and one or two years' experience in industry. A good knowledge of Pascal and Programming for Real Time Systems would be an advantage.

The position will attract a competitive salary together with a range of benefits appropriate to working with a large international consultancy and research contracting company.

Please apply to:
Mr. H. W. Pike, Personnel Manager
ROBERTSON RESEARCH INTERNATIONAL LIMITED
Tyn-Y-Coed, Llanrhos, Llandudno, Gwynedd LL30 1SA
Telephone: 0482 81811

THE UNIVERSITY OF ASTON IN BIRMINGHAM
Computer Centre - User Services Group

GROUP LEADER

(Other Related) £10,670 to £13,500 p.a. Ref. 83/41

COMPUTER OFFICER

(Other Related) £10,670 to £13,500 p.a. Ref. 83/42

The User Services Group provides a range of services to users in the Computing Service. These services include applications software support and information, documentation and advisory services. Harris 8000 and ICL 1904 systems are currently used. The position involves the development, implementation and maintenance of the ICL 1904 system and is involved with the development of graphics software would be an advantage. Closing date 1st May 1983.

SYSTEMS ANALYSTS - Two Posts

(Up to £13,500 p.a. Ref. 83/43)

ANALYST/PROGRAMMER

(Up to £11,100 p.a. Ref. 83/44)

Existing and interesting new developments including networking, modelling and online systems are the focus of these three new posts in the Administrative Data Processing Unit. The Unit provides a full computer service to the Central Administration based on an ICL 1904 installation and is involved with the development of graphics software would be an advantage. Closing date 1st May 1983.

Successful candidates will have experience of integrated on-line systems, together with local networks, computer models or library systems programming experience in COBOL is required and experience of ICL 1904/8000 would be an advantage.

For further details, please apply to:
Mrs M. A. G. Burt, University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET (01 222 2671) quoting appropriate reference number. Salary scales - Other Related (A) £12,700 to £14,100 p.a. Other Related (B) £10,670 to £12,000 p.a.

User Interface Programming

The Computing Division at the Rutherford Appleton Laboratory provides a service for researchers sponsored by SERC in universities, polytechnics, and its own laboratories. An IBM 3081-D has recently been installed alongside an IBM 3032 and linked to workstations and interactive facilities (PRIME, GEC and VAX) via SERCNET. Developments are associated with exploiting new facilities consistent with a transition from services provided previously.

The User Interface Group is responsible for liaising with users, offering advice and guidance with problems, documentation and user education, implementing utilities and some involvement with developments of the service. A vacancy exists in this group for a programmer able to specialise in Network Support. It covers all the above areas and requires familiarity with problems of transporting data and programs across networks (academic, national and international) and a number of different operating systems. In addition to the above, the successful applicant will spend some time in general advisory duties.

Applicants should have an honours degree in Computer Science or related subject. A good knowledge of FORTRAN and the ability to communicate with users is essential for this post. Experience of using a large computer service, preferably IBM based, will be an advantage. Other relevant areas of knowledge are VAX/CMS, MVS/JES, PASCAL, Networking, Graphics and Operating Systems.

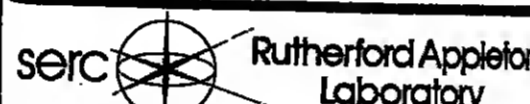
The post will be in one of the following grades, depending on your qualifications and relevant experience:
Higher Scientific Officer £6,840-£9,126
Scientific Officer £5,422-£7,399

Some assistance with the expenses incurred in house sale/purchase may be available.

The Laboratory is a friendly community with its own restaurant and sports facilities nearby. Benefits include a local transport service, sick leave allowance and generous holidays.

Application forms from: Recruitment Office, RAL, Science and Engineering Research Council, Chilton, Didcot, Oxon OX11 0QX. Tel: Abingdon (0235) 445435 quoting ref VN144.

Closing date for applications: 19th May, 1983.



PROGRAMMER FOR INTER-GOVERNMENTAL ORGANIZATION IN WEST END

SALARY £8,144 TAX EXEMPT

Annual leave six weeks plus other benefits. Required to work on ICL 2904 computer running under Exec 2S, extensive use of Minimate and Filetab.

Candidates should be over 25 years of age, with at least three years' experience of ICL Cobol and a good knowledge of Filetab and Basic. Experience of range Cobol would also be an advantage.

Apply in writing, enclosing complete c.v., to:
Personnel Officer
International Coffee Organization
22 Berners Street
London W1P 4DD

RPG III ANALYST/PROGRAMMERS

CITY OF LONDON
TO £12,000

Hertley Cooper is a well-respected, medium-sized International Lloyds Insurance Broking Group.

A team of three Analyst/Programmers are now working on a major project but new work lies ahead, and we need two more members to join us. Our current location is Enfield in Middlesex, but we will be moving to the City later this year.

Applicants should preferably have at least one year's experience on an IBM System/38 working on financial or business applications, you should also have a sound knowledge of RPG, be enthusiastic and prepared to work hard to ensure the success of the project.

In return you will have the satisfaction of working to high standards in a small friendly team with a genuine career opportunity to move towards project leadership. In addition to our attractive salary the Group offers four weeks' annual holiday, lunch vouchers, a non-contributory pension scheme, and a profit-sharing scheme.

Please apply in writing with brief cv to:
Mr. J. Tadmor, Group Personnel Manager
THE HARTLEY COOPER GROUP
85 Gracechurch Street
London EC3 0AJ

TEAM LEADER

up to £12K South Bucks

"to make a significant contribution to our ambitious systems development programme"

Amersham International is a highly successful world leader in the supply of sophisticated technical products for use in medicine, research and industry. Our expanding world-wide business operation calls for a rapid expansion in corporate information systems resources to meet the needs of an ambitious systems development programme covering production, finance and marketing applications.

We now seek a Team Leader to manage a group of programmers/senior programmers working on the development of a range of on-line data base systems for a distributed processing environment. We currently operate an ICL-based network using IDMS data base systems, but are actively reviewing our future hardware needs to upgrade the system. The ability to stimulate, direct and manage change is essential.

Candidates should possess:

- ★ extensive COBOL experience
- ★ ideally 2-3 years in a team-leading role
- ★ experience of data base and on-line systems development and
- ★ knowledge of modern programming techniques.

Excellent benefits include relocation assistance to this attractive South Buckinghamshire location.

Please send full career details or write for an application form, quoting ref. PRB/1, to the Personnel Manager at the address below:

Amersham International plc
White Lion Road Amersham
Buckinghamshire HP7 9LL

Amersham

UK AND OVERSEAS CONTRACTS

ANALYSTS PROGRAMMERS PROGRAMMER/ANALYSTS

Opportunities are available for a number of contract and permanent candidates with the Tangent Systems and Software Group. Our support services are in demand by many client companies around the world. Amongst our current requirements are the following:

ADABAS, NATURAL, OS, MVS-
RPGIII, S34/S38
HP3000, COBOL, IMAGE, QUERY
DEC VAX, BASIC +2
DIGICO, CICS COBOL
ADF and IMS/DC
COBOL, CICS, DL1, JACKSON
COBOL, IMS DB/DC
DB2/VS, CICS
SAS experience
WANG/VS, COBOL
IBM Series 1

Programmers/Analyst
Programmers
Programmer/Analyst
Programmers
Programmers
Programmer/Analysts
Systems Programmer
Analyst/Programmer
Analyst/Programmer

London
H. Counties
London
Switzerland
Essex
London
London
H. Counties
France
London
London
Egypt

We will offer excellent rates of pay for either contract or permanent employment to candidates for these requirements.

Please contact: TANGENT COMPUTER SERVICES LTD.
102/108 South Street
Romford, Essex RM1 1RX
Tel: Romford (0789) 750201 (24 hour answering service)

tangent
SUCCESS IN THE SOFTWARE WORLD

APPLICATIONS MARKETING EXECUTIVE

TO: Key Revenue Generators

SUBJECT: Joint Marketing with Third Party Application Software Vendors - MANCOS, FCS-EPS, TELEXEC, NAG, GINTRAN, UNIGRAPHICS, ANSYS, BERSAFE, ROSE, TRAIN, TOTAL, RAPPORT, GINO-F, AUTOMATE 80, SPSS.

The above are just some of the third party products available on Data General equipment. Data General has a key objective to further extend its already wide applications base by joint marketing agreements with third party software vendors. To this end we seek to appoint an Applications Marketing Executive who will be responsible for:

- identification and evaluation of suitable software for inclusion in the programme
- negotiation of contracts and oversight of their implementation
- marketing support programmes to qualified vendors, including exhibitions, seminars, product briefs, advertising, etc
- organisation of conversion programmes and sub-contracting of special local developments

YOU MUST HAVE:

- a background in applications marketing and be currently working with a manufacturer or major software house
- a broad knowledge of significant developments in the industry
- the initiative, imagination, drive and sheer ability to maximise the opportunities offered by the combination of Data General's outstanding product range and third party software.

CHALLENGE:

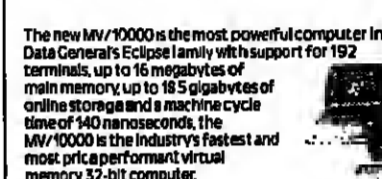
Here is an already successful project: build on it -

make it into a key revenue earner

WHAT'S IN IT FOR YOU:

As well as offering a genuine career opportunity, we will negotiate a remuneration package which will attract the best talent available - if you can convince us that you can deliver the goods.

Send your c.v. or write or telephone for an application form to:



Data General

We deliver the goods that deliver the goods

John Cunnell,
Personnel Manager,
Data General Limited,
Hounslow House,
724-734 London Road,
Hounslow Middlesex TW3 1PD
Tel: 01-572 7455.

DOUGLAS METROPOLITAN BOROUGH
COUNCIL FINANCIAL SERVICES

Applications Development Manager

FD1 (B-10) £10,800-£12,174

The Computer Division provides a wide and growing range of services and operates a team of 100 - one under VME and the other under VAX/Alpha 3 - and has extensive facilities. The Applications Development Manager is responsible to the Deputy D.P. & Technical Support Manager for all activities concerning the development and maintenance of computer systems, specifically those relating to the systems and programming function. Applicants must be experienced in controlling staff and in Systems Analysis design and should also have either a degree or equivalent qualifications in computing.

Assistance with housing and removal expenses in appropriate cases.

Application forms and further details from: Chief Executive (Personnel Section), 2 Priory Place, Doncaster DN1 1BN (telephone 0322 28251). Closing date 13th May 1983.

We are an equal opportunities employer.

THE UNIVERSITY OF MANCHESTER LECTURER IN ACCOUNTING WITH SPECIAL RESPONSIBILITY FOR COMPUTER PROGRAM DEVELOPMENT

Applications are invited for the above post from candidates with computer programming experience, preferably in FORTRAN and BASIC. The postholder will be responsible for programming support for the areas of departmental teaching and research which involve the use of computers - both microcomputers and mainframe systems. Some knowledge of non-quantitative applications in accounting and finance is desirable. Salary range: £8,275-£19,205 p.a. Superannuation.

Further particulars and application forms (available by post) may be obtained from: The University, Manchester M13 9PL. Details ref. 123/83.

Systems Programmers

W. London Up to £14,500

Marks & Spencer's Systems Support Group is looking for further high calibre Systems Programmers to work at the Company's computer centre in West London.

The successful candidates are offered a challenging future if they have proven knowledge and experience in some of the following areas:
ICL (VME) and/or DEC (VMS) operating systems;
ICL Superstructure products such as IDMS, TPMS etc;
Communications software on ICL or DEC equipment;
CME/DME System Support.

Starting salary will be negotiable up to £14,500. Other benefits include a non-contributory pension and life assurance scheme; profit sharing after a qualifying period; 4 weeks annual holiday and a subsidised staff restaurant. Relocation expenses will be paid where appropriate.

To find out about our systems in detail and about the kind of assignments you would be involved with, please ring T.E. Mitchell, Operations Manager, on 01-994 3838.

For an application form write to Mrs. E. K. Tyack, Marks & Spencer, Michael House, 47 Baker Street, London W1A 1DN.

Marks & Spencer

CONTRACTS

ICL

2900 VME IDMS/TP COBOL - CONSULTANTS/SENIOR ANALYSTS/PROGRAMMERS
PROJECT MANAGERS 2900/1900
DATABASE DESIGNER
DATA ANALYSIS ANALYST
IDMS/DDS VME 2900 SENIOR SYSTEMS ANALYSTS
1900 GEORGE III, COBOL PROGRAMMERS
VME 2900 - SUPPORT PROGRAMMERS
SYSTEM 25 PROGRAMMERS
DRS/PASCAL PROGRAMMERS
ME29 IDMS COBOL ANALYST/PROGRAMMERS
DRS - CIS COBOL ANALYST/PROGRAMMERS
DRS - CIS COBOL PROGRAMMERS
IBM

MVS SYSTEM PROGRAMMERS (MAY)
IMS COBOL/ASSEMBLER PROGRAMMERS
OS CICS COBOL PROGRAMMERS
IMS DB/OC COBOL ANALYST/PROGRAMMERS
MVS IMS DATABASE ADMINISTRATOR
SYSTEM 38 RPGIII PROGRAMMERS - VARIOUS
ADABAS NATURAL PROGRAMMERS
DOS VSE CICS OLII VTAM SYSTEM PROGRAMMERS
8100 DPCX PROGRAMMERS AND DESIGNERS (VARIOUS)
DOS VSE ICCF CICS COBOL RPGI PROGRAMMERS
MAAPICS CONSULTANT

OTHER

PDP11 RSX11M RTL2 PROGRAMMERS
VAX VMS COBOL PROGRAMMERS
VAX FORTRAN PROGRAMMERS
VAX VMS OR RSX11M CORAL 66 PROGRAMMERS
VAX VMS SYSTEM PROGRAMMERS
TANDEM NONSTOP 2 SYSTEM PROGRAMMER
UNIVAC FORTRAN PROGRAMMERS
MOTOROLA 6805 ASSEMBLER PROGRAMMERS
MICRO (CPM) SUPPORT/CUSTOMER LIAISON
TECHNICAL AUTHORS - NUMEROUS
HP 3000 RAPID IMAGE - COBOL ANALYSTS/PROGS SCOTLAND
MILITARY/OFFENCE - VARIOUS

OVERSEAS

IDMS/VME/COBOL - ANALYST/PROGRAMMERS - KUWAIT
TPMS/VME/COBOL - ANALYST/PROGRAMMERS - KUWAIT
VME/FILETAB COBOL - ANALYST/PROGRAMMERS - KUWAIT
PRIME/FORTRAN SENIOR ANALYST/PROGRAMMERS - KUWAIT
HP 3000 IMAGE QUIZ QUICK - CONSULTANTS/PROJECT LEADERS - SAUDI ARABIA
UNIVAC 1100 OMS COBOL PROGRAMMERS - USA
RSX11M SYSTEM PROGRAMMER BRUSSELS
SEL32 MPX ASSEMBLER PROGRAMMERS BRUSSELS

Comac
Contracts

Computer Appointments & Contracts Ltd

27 Town Centre, Hatfield, Herts. Telephone Hatfield (07072) 65699 or 69889. (24 hour answering service)

(3480)

DATABASE SPECIALISTS

SUPPORT FOR TOTAL SYSTEMS SOLUTIONS-TO £18K+ CO CAR

One of the major UK Software Houses/Consultancies in the HOME COUNTIES is seeking leading DATABASE SPECIALISTS for key SUPPORT roles in multi-disciplined teams providing TOTAL SYSTEMS SOLUTIONS. Demonstrable achievements over several years and awareness of current developments in the following DATABASE fields are essential:-

DATA ANALYSIS

DISTRIBUTED DATABASE

DESIGN

PERFORMANCE

IMPLEMENTATION

ADMINISTRATION

Vacancies exist to support the following areas, in which previous experience would be desirable:-

- INTEGRATED OFFICE AUTOMATION/DATABASE INFRA-STRUCTURE ENGINEERING
- COMMAND AND CONTROL ENVIRONMENTS AND RELATED INFORMATION SYSTEMS
- KNOWLEDGE ENGINEERING
- COMMERCIAL AND FINANCIAL CONSULTANCY SUPPORT

For further information please telephone JOHN WILLIS at IMPC on 01-486 5644.



Top Jobs For Top Software People

Insight Marketing & Personnel Consultants

MANCHESTER—Austin House, Charlotte Street, Manchester 1. Telephone: 061-236 7026
LONDON—72-76 Marylebone High Street, London W1M 4AJ. Telephone: 01-486 5644

Top calibre Analysts & Programmers

West London

Up to £12K+ bonus

Our client, one of the fastest growing multinationals in the FORTUNE list of the top 500 companies, is a minicomputer manufacturer with a public commitment to continuing expansion which includes the provision of top quality turnkey services. To this end an independent systems division has been set-up in the UK with European wide responsibilities to offer systems design, special purpose software, systems integration and other services to large corporations across a wide variety of commercial and technical applications.

Several more top flight analysts and programmers are required. A good working knowledge of COBOL, PL1 or Fortran is essential together with hands on experience of Transaction Processing systems or Real Time applications.

The ability to write program specifications will certainly be of interest and candidates for the more senior appointments must be able to demonstrate relevant systems design skills on commercial and/or technical applications.

These positions offer one of the most attractive

working environments in the industry including:-

- The opportunity to extend experience into completely new application areas.
- Positive encouragement to get hands on experience across the product range from micros to £1,000,000 super minis.
- A chance to acquire knowledge of new languages, operating systems and support aids.
- Outstanding opportunities for personal growth, particularly into project management.

The highly competitive remuneration package is complimented by a company car for the more senior appointments and will be earned by more junior staff, on promotion.

In the first instance contact Chris Denington on 01-631 4184 or write to: A & A Consultants (Holding) Ltd., County House, 10 Little Portland Street, London W1N 5DF.



(3130)

Programmers

£7,500-£11,000

*Now is the time to make a positive
and exciting career move*

BIS Software Limited is a market leader in providing advanced computer systems to international banks around the world—nearly 300 banks in 51 countries are using our system—marketed under the MIDAS trademark. We have won two consecutive Queen's Awards for Export Achievement (1981 and 1982). In the last year, we sold more of our systems than ever before and current and projected developments enable us to offer exciting career opportunities to experienced people.

For a software company we are unique, specialising in the financial market place, with locations in key countries throughout the world (New York, Los Angeles, Miami, Toronto, London, Luxembourg, Bahrain, Singapore, Hong Kong, Tokyo with Paris and Frankfurt planned).

Career opportunities exist throughout the world, but principally now in London. Because of our growth, supervisory and managerial opportunities continually arise and appropriate development training is given.

BIS is a fast growing, dynamic company in a strong market place. Its products have excellent references and are being continually enhanced. To participate in this company and personal success story, thereby enhancing your own career and horizons, you need to have a minimum of 18 months experience in RPG II/III with preferably IBM S34/S38 knowledge.

Contact the Personnel Manager on 01-928 3551 or send a brief CV.

(3378)



BIS Software Limited
York House, 199 Westminster Bridge Road,
London SE1 7UT
Telephone 01-928 3551



PROJECT LEADER SYSTEMS ANALYST

CHELTHENHAM

Spirax Sarco Ltd. is an International Company based in Cheltenham and is market leader in the field of Energy Saving Control Equipment for steam water and compressed air services.

We will shortly be commencing an extensive programme of computer systems implementation in Sales, Financial and Manufacturing application areas. In the main, systems will be based on computer software application package solutions. The following vacancies have arisen:

PROJECT LEADER

We require a Project Leader with the ability to head up a small team of data processing specialists and user department personnel, to be engaged initially in the Sales Order Processing and Accounting areas.

Applicants should have had at least four years' data processing experience at either Project Leader or Business Systems Analyst level, dealing with commercial type applications.

We are looking for someone aged between 30-35 with a proven track record of successful computer systems implementation.

SYSTEMS ANALYST

To work as part of the Project Team concentrating on manufacturing systems, we require a Systems Analyst with a minimum of three years' experience, preferably with some programming background.

Applicants should have experience of all phases of computer systems project development, especially in the design and implementation of commercial systems. Professional age is 28-35.

Attractive salaries will be linked to age and experience and there are additional fringe benefits in keeping with a progressive company, including non-contributory pension scheme and BUPA membership.

Please apply in writing, giving details of career to date to:

Computer Systems Manager
Spirax Sarco Ltd.
Chorlton House
Cheltenham GL53 8ER



(13410)

TREND COMMUNICATIONS LIMITED SALES ENGINEERS

for Manchester, London, Home Counties

Trend Communications are one of the leading U.K. suppliers of Data and Telegraph Test Equipment, Computer Peripherals, Commercial, Military and Data Processing Printers and the highly successful Puma Telex Terminal.

Continued expansion means that we need more Sales Engineers to join our highly skilled team.

Successful candidates will be experienced in selling products related to the Computer and Telecommunications Industry and possess suitable technical and educational qualifications.

Benefits include a basic salary, company car and realistic commission scheme related to experience and success.

Applications are required in writing with comprehensive career details to:
Mr. C. Huxtable, Communications Sales Manager.

Trend Communications
Limited
100, The Quadrant,
London W1P 0LQ
Tel: 01-626 2541, 2542, 2543
Fax: 01-626 2544



TREND

Instron is one of the most successful and advanced manufacturers of materials testing equipment in the world. We have the following vacancies in our small but busy Data Processing Department.

PROJECT LEADER Up to £12.5K SENIOR PROGRAMMER Up to £11.5K

For both of these positions we are looking for at least 4 years' experience of IBM machines with COBOL. The successful candidate should ideally be educated to degree standard.

In keeping with the high standards which we maintain the company is able to offer a competitive salary package together with the usual benefits including non-contributory pension and life assurance scheme etc. Relocation assistance will be provided where appropriate.

For an application form please ring the Personnel Department or write to the Personnel Manager enclosing a detailed C.V.

Instron Limited, Corporation Road,
High Wycombe, Bucks. HP12 3BY
Telephone: High Wycombe (0494) 3333
(men or women may apply)



CHIEF OPERATOR CIRCA £8,000

For a mixed installation ICL ME20 CTL 8000 CROMEMCO System 3 ME20 and GEORGE 2 experience essential. Knowledge of Minis and Micros an advantage.

Candidates should have had 4 years' experience, including a senior position within a ME20 installation.

Send full details or apply for an application form to: Mrs J. D. Parr, Personnel Officer, Haden Pla., 7-12 Tavistock Square, London WC1H 9LZ.

(13443)

The EUROPEAN MOLECULAR BIOLOGY LABORATORY, a research institute situated in HEIDELBERG, Germany, invites applicants for a post as:

SCIENTIFIC PROGRAMMER

In the Computing and Applied Mathematics Programme to implement, maintain and further develop a user-oriented system for the computer analysis, storage and comparison of two-dimensional protein gel electrophoresis patterns. Other possible activities in addition to image processing might be the statistical analysis of protein and nucleotide sequence data. Applicants should have at least a bachelor's degree and good academic record and several years' experience in writing well structured and documented programmes. Expertise in efficiently handling large amounts of data in such areas as image processing, pattern recognition, and interactive graphics is highly desirable. An above-average salary will be offered to the successful candidate. Certain allowances are payable in addition, depending on personal circumstances. An initial contract of 3 years' duration, which can be renewed, will be offered.

Please write briefly for an application form quoting reference No. 83/11 to:
EMBL, Personnel Section,
Postfach 10-2208, D-6900 HEIDELBERG

SHAPE TECHNICAL CENTRE THE HAGUE, NETHERLANDS

A NATO technical/scientific establishment has a vacancy on its international staff for a:

SCIENTIFIC ASSISTANT

DUTIES

- Program development, coding, documenting and testing;
- Installation and testing of prototype systems;
- Programming assistance to users of laboratory software development system;
- Day-to-day running of development systems.

The work will be done under the direction of a Senior Scientific Assistant or Scientist.

QUALIFICATIONS - HNC or equivalent
-Working knowledge of FORTRAN IV (or other HCL)
-Two years' relevant practical experience
-A good knowledge of English is essential

Initial annual net salary for non-Dutch married officials without children amounts to DG 48,727.

Candidates who are nationals of one of the NATO countries, should apply to the Personnel Officer, SHAPE Technical Centre, PO Box 174, 2501 CD The Hague, quoting reference CCS-81-83, within three weeks of the appearance of this advertisement.

(13471)

SOFTWARE ENGINEER

Micro Memory Systems Ltd, a member of the International Grundy Group of companies, located in Newbury, Berkshire, are European representatives for Electron 5 1/2 inch Winchester disk technology and DTC Intelligence controllers. Micro Memory Systems have also developed and marketed a range of Winchester disk systems for a variety of applications.

We are now expanding our group and seek a competent Software Engineer with experience of ASSEMBLER programming of micro-processors. Experience gained on any micro-processor will be relevant, for the work will involve modification and additions to operating systems and utilities for a wide variety of 8- and 16-bit M.P.U.s.

The salary package will recognise the experience of the successful applicant and the importance of the position in Micro Memory Systems. A bonus scheme is also in operation.

Please apply to:

John Fisher, Technical Director
MICRO MEMORY SYSTEMS LTD
Kennet House, 85 London Road, Newbury, Berkshire RG12 1JN
Telephone (0635) 40406

(13438)

DEPARTMENT OF COMPUTING SERVICES

SYSTEMS PROGRAMMERS (£5352-£8325)

Two systems programmers required, one to support TOPS-20 software on a DEC-20 computer, and the other to support RSX-11M and/or RSTS/E software on PDP-11 computers.

Experience in the use of any DEC operating system is required, together with a knowledge of at least one programming language. Preference will be given to suitably experienced candidates, but graduates in subjects with a computing content will also be considered.

Further details and form of application available from the Staff Officer, Trent Polytechnic, Burton Street, Nottingham NG1 4BN. Closing date 13 May, 1983.



PENWITH DISTRICT COUNCIL COMPUTER PROGRAMMER GRADE AP.5

An interesting and rewarding job opportunity has arisen in the Council Offices at Penzance for a Computer Programmer.

The post is initially for one year assisting in the introduction of a set of packages during which time the future development workload will be assessed. Should this workload justify it the appointment may be made permanent. Salary will be within the Scale £7,791-£8,325. The successful applicant should have at least two years' full time experience in programming, a knowledge of BASIC or CMC DATA/BASIC would be an advantage.

Applications stating age, experience and the names of two referees to the Treasurer, St. Clare, Penzance, by 11 noon on Friday, 6th May, 1983.

(13481)

MODUS

Modus Management Services Limited
19 West Street, Dunstable, Beds. LU6 1SL
Telephone: Dunstable (0582) 608002
Evenings/Weekends: (0908) 670094

The CONSULTANCY CHALLENGE

Surrey/Hants Border Salaries £8,000-£18,000 + car

Since the late sixties our client has been offering consultancy, systems and software development services throughout the world and has achieved an exceedingly high reputation during this period. Over the past few years the demand for their main areas of expertise (namely, the mini and micro computer areas of defence, communications, information systems and real-time systems) has increased at an amazing rate. Accordingly, they urgently seek the very best software professionals available to sustain their prolific growth and excellent track record. Below are six of the opportunities available, but there are many more besides, ranging from Programmer to Principal Consultant levels...

Consultant - Videotex Specialist

A proven ability in Videotex technology is essential and should ideally have included project definition and proposal production for new work and close liaison with customers. Candidates must possess technical expertise in Videotex and those with backgrounds including telecomm, packet switching and networking will be of particular interest - especially those from a previous consultancy (or a manufacturing) environment.

Senior/Principal Consultant - Banking & Finance

Naturally, previous experience of either Banking or Financial projects is highly desirable, but the essence of the work in this group is to produce high availability/high reliability systems. Accordingly, most of the systems are implemented on TANDEM hardware. Therefore, unless their banking/finance knowledge is particularly deep, candidates really must have demonstrable TANDEM experience and an in-depth understanding of the communications related aspects of these systems.

Software Engineer - Software Technology

The Software Technology Group tends to handle most of the company's private venture, research and development work. This includes compilers and operating systems (UNIX, Ada), software engineering tools & methods (MASCT) and of course 'Expert' Systems. Obviously experience of SAGE would be viewed with the greatest of interest. Candidates must have between three and eight years experience, preferably with a good knowledge of the VAX and, if possible, Ada.

Programmer - Industrial & Defence

Candidates must be fluent in Coral 66, Pascal or a similar block-structured language and should have experience of either real-time defence applications or communications (message switching, networks, voice/data comms, etc). For the young, but discerning careerist who currently feels fettered by a large bureaucratic environment, this must represent a most ideal opportunity for exciting new work and swift career advancement.

Software Engineer - Communications

Throughout the world the communications business is both booming and buoyant and encompasses everything from Satellite communications to micro-based Local Area Networks, Videotex to fibre-optics. Our client's interest in communications covers most of the spectrum, therefore any related experience will be considered very seriously indeed. Ideally, however, candidates will have had between two and six years experience gained in either a military or commercial and industrial environment and be keen to deepen their knowledge and awareness of this continually expanding area of the computer industry.

Scientific Programmer

A unique opportunity currently exists for a person to take a leading role in a challenging new project involving digital image processing. Candidates in the age range 25-28 should have a good mathematics, engineering or science degree and must have a minimum of four years experience in scientific software. Experience of digital image enhancement and/or feature detection, using FORTRAN or other high level languages on PDP-11/VAX or MC88000 is required. Enthusiasm, self motivation and communication skills are essential.

...Further Opportunities

It is difficult to list each and every opportunity available because they tend to vary as positions are 'tailored' to compromise the company's requirements against the individual's skills and talents. Suffice to say, however, that a number of alternative positions do exist, so general applications would be viewed with extreme interest and considered very seriously indeed. The essential qualifications of all candidates may be summarised as follows:-

- * Educated to degree level.
- * Have at least two years real-time systems experience.
- * Be mobile, self motivated, communicative, self assured, etc.
- * Either have the 'consultancy presence' or, at the more junior levels, actively want to work in a consultancy environment.

Without doubt a more challenging, demanding and exciting environment would be hard to find and the opportunities afforded difficult to surpass.

Contact David Walder for more details and information.

Modus Consultants are in London every Tuesday & Thursday - come and meet us

do this 1st

THE ROGER PARKER ORGANISATION

ANALYSTS, PROGRAMMERS U.S. \$35,000 c. (Tax Free)

Large International Bank in the Middle East require a number of people to form the nucleus of their development team. Experience of DEC hardware plus ARBAT and AIMS is essential. Work contents include Loan Assignments, Customer and G/L Accounting, Management Information Systems, Credits and FX Money Market Settlements. Location: Bahrain

PROGRAMMERS TO SENIOR ANALYSTS £8,000 to £14,000

Major food retailing organisation are setting up a new installation and require a number of professional staff to work on commercial systems utilising the latest on-line database techniques. The environment will consist of the latest IBM hardware running under MVS. Knowledge of TSO, IMS/DB/DC is essential plus COBOL and/or ASSEMBLER. Location: Herts.

PROGRAMMING TEAM LEADER £12,000 c.

Someone with five years' IBM COBOL and including a minimum of two years' CICS, DL/I experience, is required to lead a team of programmers. The target mainframe is an IBM 4341 running under DOS/VSE. Development work covers applications under the headings of Manufacturing and Entertainment. Location: West London

P.S.: On our contracts file:

Operators with IBM DOS/VSE and MVS/JES 2/3 required for 4-6 months Anal/Progs. Software house requires COBOL Analysts/Programmers with insurance systems experience. Any mainframe, six-month contract, renewable.

INTERESTED? Then telephone CLIVE CHATTIN now, or write to him at:
(13482)

4 LONDON WALL BUILDINGS, BLOMFIELD STREET, LONDON EC2M 5NT.
01-588 8661

OPPORTUNITIES WEST OF LONDON

Communications Programmer
SURREY to £15K
Our client is at the forefront of remote data communications technology. A communications programmer is required to be responsible for design thru to implementation (including coding and testing) of the X25 interface to the PBS public data service. He/she will be well versed in assembler (ideally MACRO 11) and have a good understanding of communications.
This exciting role offers a high starting salary plus the opportunity to be involved in sales support activities.
Ref: K77

Sen. An/Prog. REAL TIME
READING to £10K
A Market Leader in the design and manufacture of high quality data capture systems, seeks an additional senior analyst programmer. The successful candidate will have sound experience of real time applications, including assembler on DEC, INTEL or Z80. PASCAL would be advantageous.
He/she will have had previous supervisory experience, be capable of planning projects and scheduling manpower, and enjoy direct customer liaison.
This will involve a wide variety of non-defence projects in a pleasant in-house environment.
Ref: K78

ICL VME Specialist
BERKSHIRE £10K-£14K
Leading international systems software company is currently developing a new range of software products for the ICL VME operating system. Candidates should have a sound knowledge of the VME system, be familiar with SFL and have experience of languages such as COBOL or PASCAL.
In return, the company offers a career position within an innovative software environment together with the opportunity to broaden your knowledge of software and hardware products.
Ref: AC3

BASIC Programmers
BERKSHIRE to 29K
A fast expanding and highly successful computer services company seeks to recruit programmers with between 1 and 8 years BASIC experience in a commercial environment.
You will be actively involved in developing commercial systems on a variety of main and micro.
Career progression in this stimulating environment is excellent, with an early opportunity to move into design/team leading role.
Ref: AC10

Sen. Programmer ME29
N. HANTS to £10K
A specialist in the storage and distribution of temperature controlled products to national food multiples is embarking on an ambitious development phase, including plans for DATA DICTIONARY, IDMS and networking of a later date.
A senior programmer is required to augment their ME29 team using RANGE COBOL. A sound knowledge of MTS or TME/TP is essential.
Benefits include good salary, pleasant environment, flexible hours, realistic career development and, of course, the opportunity to learn new skills.
Ref: K71

Programmer DEC RT11/CTS300
WEST LONDON to £8,500
Our client, a multinational management service organization, with a turnover of \$300,000,000 develops advanced systems for particular market sectors using a mixture of hardware (DEC, IBM) software and telecommunications facilities.
An opportunity has arisen with their Travel and Leisure division for a Programmer to work as part of a team on the development of Hotel Reservation Systems.
Programming experience under the RT11 or CTS300 operating system is essential.
The position offers the opportunity to broaden experience and progress into either a client contact role or a more senior software development position.
Ref: K72

MVS JES2 OPERATORS
BIRMINGHAM C£8K
18 months' MVS JES2 experience is required to join this expanding installation and a knowledge of JCL would be a plus. Excellent prospects for the right applicants.
Ref: AM77/CW

NETWORK SUPPORT
C. LONDON C£9K
Minimum one year's experience on a remote network is required to join this installation. Knowledge of QOS CICS VM-CMS, BSC Protocol and modern equipment is essential, together with a sound data communications background. Good prospects.
Contact Anna-Marie on 01-836 8411 regarding the above positions.
Ref: AM72/CW

OPERATIONS CONTROLLER
W. LONDON £10K
A dedicated and hardworking supervisor is sought by our client to take total responsibility for the imminent installation of their IBM 4331. The successful applicant will be recruited for his/her thorough DOS/VSE VTAM expertise and ability to train and motivate a department of five. You must possess over two years' proven supervisory skills, be capable of undertaking systems generation and organising the computer room to a high standard.
Ref: K598/CW

DOS/VSE OPERATOR
LONDON C£8.2K + PERKS
This prestigious 4341 site is keen to recruit a highly skilled DOS/VSE operator with approximately 18 months' experience. You will be joining an installation where there is movement into technical support or systems programming. Two shift operations.
Contact Key on 01-836 8411 regarding the above positions.
Ref: K592/CW

OPERATOR SUFFOLK C£5-8K
Our client requires a young enthusiastic operator, training on an IBM System 36 will be given to the successful applicant if necessary. Days only.
Ref: L898/CW

NETWORK CONTROLLER S.E. LONDON £9K
Young network controller to work in this rapidly expanding TOC centre. International network, lots of user liaison. Extended day shift.
Ref: L897/CW
Contact Lynne on 01-836 8411 regarding the above positions.

CONTRACTS
Birmingham 4700 Operator - urgent
O.G. ACS Operators - urgent
OS/VS1/VM OPERATORS and SHIFT LEADERS - SAUDI ARABIA
Contact Stephen on 01-836 8411 regarding the above positions.

Go Operators
Vill House, St Martin's Lane, London WC2N 01-836-8411

Field Service Engineers.

Rewarding opportunities in the Middle East.
£20,000 plus car + comprehensive benefits.
Single or married status.

"Progress within the Middle East is linked with the ability to benefit from and control advances in technology. However, technological development generally outpaces society's ability to use it practically, this being especially true within the computer and communications environment."
We are a major Saudi - North American joint venture communications company totally committed to the office automation world within the Middle East. Based on many years of experience in the planning, design, engineering, installation, customer training and maintenance, we offer a total systems integration service coupled with a computer service bureau for electronic correspondence based on our in-house Tandem processors.



Already employing over 140 personnel within our headquarters in Al-Khobar we are seeking to expand this headcount considerably, with a view to opening new offices throughout Saudi and other Gulf states. To this end we are currently seeking to recruit two experienced Field Service/Customer Engineers with the following attributes:
1) To add additional engineering support to our Tandem installations we are seeking a person who has specific experience with Tandem hardware. The individual would also be required to execute service activities on our range of

micro, mini, peripheral and data communications equipment. However, apart from the Tandem pre-requisite, should also be data communications oriented.
2) The second person would have a background in data communications with specific knowledge of statistical and divisional multi-plexing and would probably be currently employed by an organisation involved in this field.
Both positions carry a base salary of around £20,000, company car, housing, single or married status and a host of other benefits including six weeks holiday and paid R and R.
Take the first step in gaining the opportunity to join a technically demanding but financially rewarding environment by phoning our recruitment adviser Paul Pearce NOW on 021-643 8501 (office hours) or 05432-67483 (even/weekend) - alternatively mail your c.v. to his Birmingham office. See People, Alpha Tower, Birmingham B1 1TT.

Sales People
021-643 8501

Offices in London, Croydon, Birmingham, Manchester, New York, Los Angeles



Opportunities in Customer Support

Our client is a major computer service organisation backed by the resources of an international group of companies. From their base in the Northern Home Counties, they provide a wide range of services.
One area of specialisation is the provision of Turnkey packages to Quantity Surveyors in private practice, local authorities, contractors and consulting engineers. Due to the success of these products, our client is currently entering a growth phase and wishes to make the following appointments.

Sales Support Consultants

Candidates, male or female, should have experience in one or more of the following areas: DEC PDP 11/23 using RT11, TSX+, and DBL. Application knowledge of Sales, Purchase, Nominal Ledgers and Word Processing.
The role is likely to be of particular interest to Support Programmers who wish to move into a customer support environment. The ability and desire to react to technical business training plus good presentation and communication skills to deal confidently with users and prospective clients at all levels are essential.
Competitive salaries will be paid and a company car provided. In addition, benefits include 5 weeks' annual holiday, pension scheme, free life assurance and an excellent sports club. This is an ideal opportunity to step into a challenging, worthwhile and secure career.
Please write with full details. These will be forwarded direct to our client. List separately any companies to whom your application should not be sent. Ref: FY.1336.

ASL CONFIDENTIAL RECRUITMENT
17 & 18 TRATTON STREET, LONDON W1X 60R
A member of MSL Group International

COMPUTER SCOTLAND '83
MAY 12 INSIDE

Recruitment report to coincide with **COMPUTER SCOTLAND '83**
Kelvin Hall, Glasgow, May 17-19, 1983.

To reserve space in the May 18 Scotland Recruitment Report
Phone: (01) 661 8000
Copy deadline is Monday, May 9

Classified Department
Quadrant House
17, Quadrant Road
Birmingham B15 2JG

Computer Weekly

COBOL Programmers

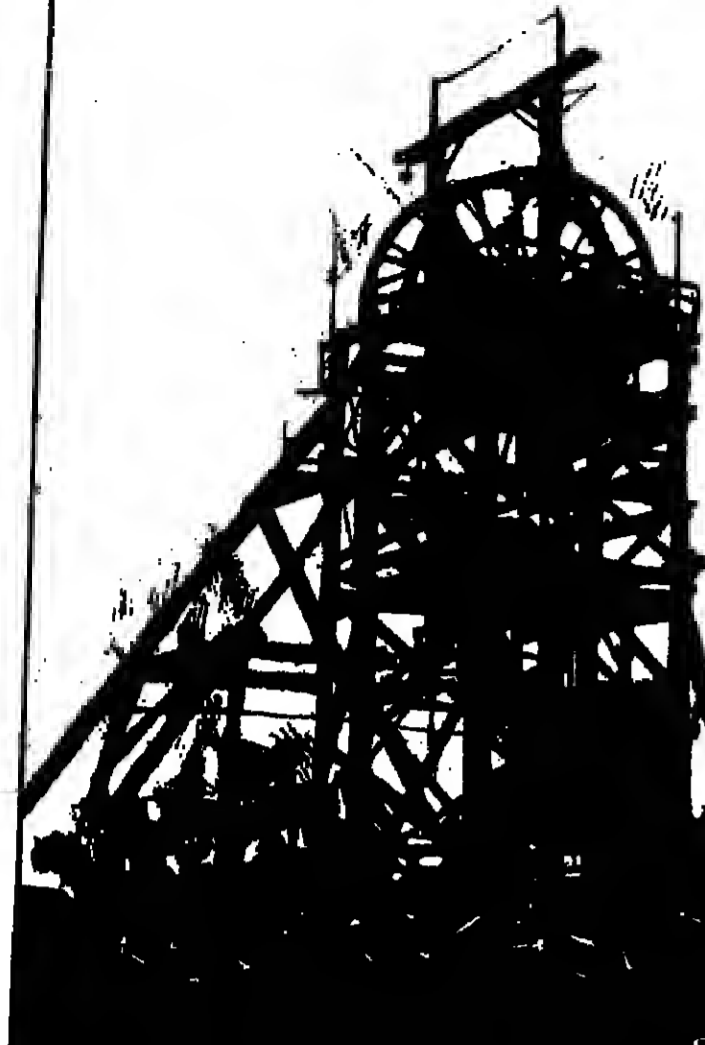
Hampshire
To £13,000 + Car Allowance

Our client, a subsidiary of a substantial international group, is a fast-growing systems house providing a comprehensive range of products and services to clients operating in the European manufacturing and distribution sector.
To support a programme of sustained growth a number of programmers are required in grades ranging from programmer to team leaders. Programmers work in mixed systems and programming teams with hardware dedicated to development.
Software is developed for the complete spectrum of Digital Equipment hardware including the VAX range, DECSYSTEM-10, DECSYSTEM-20 and PDP-11s.
Full training will be given where necessary and all new recruits will be given specific training in database, data dictionary and interactive programming techniques.
Applicants should have a minimum of one year's COBOL experience with significant career opportunities available in programming for more experienced staff.
Opportunities for career development, both in programming and systems, are excellent and are geared to personal performance and commitment.
Salaries and benefits are aimed at recruiting and retaining high quality staff. Relocation expenses will be paid where appropriate.
Please contact Brian Postles.

Ferguson Thorley Bowles Associates Limited
International Personnel Consultants
15 Clarence Street, Staines, Middlesex TW18 4BU
Telephone: Staines (0784) 59247. Telex: 8814148

MCL
McCOURT COUSINS LTD, 27-29 Greyhound Road, Reading, Berkshire.
Tel: Reading (0734) 595346 (24 hours)

ORE INSPIRING OPPORTUNITIES in Johannesburg, South Africa



Senior Analyst CAD

To lead a new sophisticated CAD project in the Project Engineering/Architectural design area using Intergraph on DEC in an ICL mainframe environment. With total involvement in final implementation. Candidates will require good technical analysis/database experience gained within a CAD environment. A relevant degree is desirable, together with the ability to control this area of ever increasing applications.

Senior Analyst Geological Applications

To develop generalised comprehensive data bank based geological applications systems which in conjunction with existing geostatistical systems will provide versatile tools for Geoscientists. Fluency in FORTRAN, solid technical/scientific systems experience and an understanding of geology, all backed by a relevant degree are required for this challenging new position.

Senior Analyst Technical/Scientific

To take responsibility for several technical/scientific systems in the mining, geological and engineering areas. Preferably educated to Degree level. Candidates should possess a strong fluency in FORTRAN and have designed and implemented at least one major technical/scientific system. Experience with ICL, database and graphics would be advantageous.

Our Client is a highly successful Company with an international reputation in the mining of precious metals and other minerals and is in a unique position to offer worthwhile career opportunities to suitably experienced personnel. A good salary and a wide range of benefits including bonus, non contributory pension and initial accommodation in furnished flats is offered. Full assistance with relocation and immigration requirements will be given.

Our advising consultants at SCR have full details of these positions and interested Candidates should call **Graham Utton** or **Martin Stainthorpe** on **021-236 3781** or call **021-744 1862** between 7.00 p.m. to 9.00 p.m. UK interviews will be held at SCR offices in mid May.

SCR International... bringing the world within your reach

Specialist Computer Recruitment
International Limited

MIDLANDS & INTERNATIONAL
20-22 The Quadrant, Birmingham B2 4AT
021-236 3781

HOLLAND
Waterslootweg 52
1021 CA Amsterdam
020-7120-7600/47

BELGIUM
Rue de la Paix 127
1050 Brussels
010-322-520 7151/71

SOUTH
James Street, 116 James Street
Cape Town 8001
01-935 0671/405 0361

NORTH
Pretoria House, 24 Pretoria House
Mabasa Street, Pretoria
061-833 0427

MICRO WHAT? MICROFIN!

The established British manufacturer of portable data capture terminals are moving to new, larger premises at Addlestone in Surrey. This expansion provides a unique career opportunity for three key individuals as follows:-

SALES

West London/West of England & Wales £11K Base. Target £18K
Portable Data Capture is a concept which requires flair and creativity. We are looking for these skills together with drive, enthusiasm and the will to succeed.

SYSTEMS

Software Programmer—to £10K

To DEVELOP/MAINTAIN Systems Software for the Terminal plus the Communications and Application Development System. 2 years industrial BASIC/ASSEMBLER programming plus Communications software experience on MICROCOMPUTERS required (preferably CP/M based). Degree level qualification desirable.

HARDWARE

Service Engineer—to £10K

Responsible for in-house TEST/REPAIR of the Terminals, the candidate should have the ability to accept increasing responsibility for Service and O/A functions. Minimum 2 years practical MICROCOMPUTER Hardware experience required (preferably CMOS 4000 based). Knowledge of ASSEMBLER/MACHINE CODE advantageous. HNC/HND qualifications beneficial.

Telephone **DOUG SNEDDON** or **JOHN WILLS** on **01-486 5644** for an informed discussion.



TOP JOBS FOR TOP PEOPLE

Insight Marketing & Personnel Consultants

MANCHESTER—Austin House, Charlotte Street, Manchester 1. Telephone: 061 236 7026
LONDON—72-78 Marylebone High Street, London W1M 4AJ. Telephone: 01-486 5644

California—up to \$40,000 p.a.

ACP/PARS or IPARS assignments

for Programmers • Analyst Programmers • System Programmers • Analysts

The Assignments • Los Angeles • Close to Ocean • all development work
• starts May/June • 3081 under OS MVS

Our Package provides:

- Family air fares
- Relocation allowance
- Weekly pay
- sickness pay
- local support

arranges:

- Medical Insurance
- Banking Facilities
- Accommodation
- Car transport
- Settling-in help

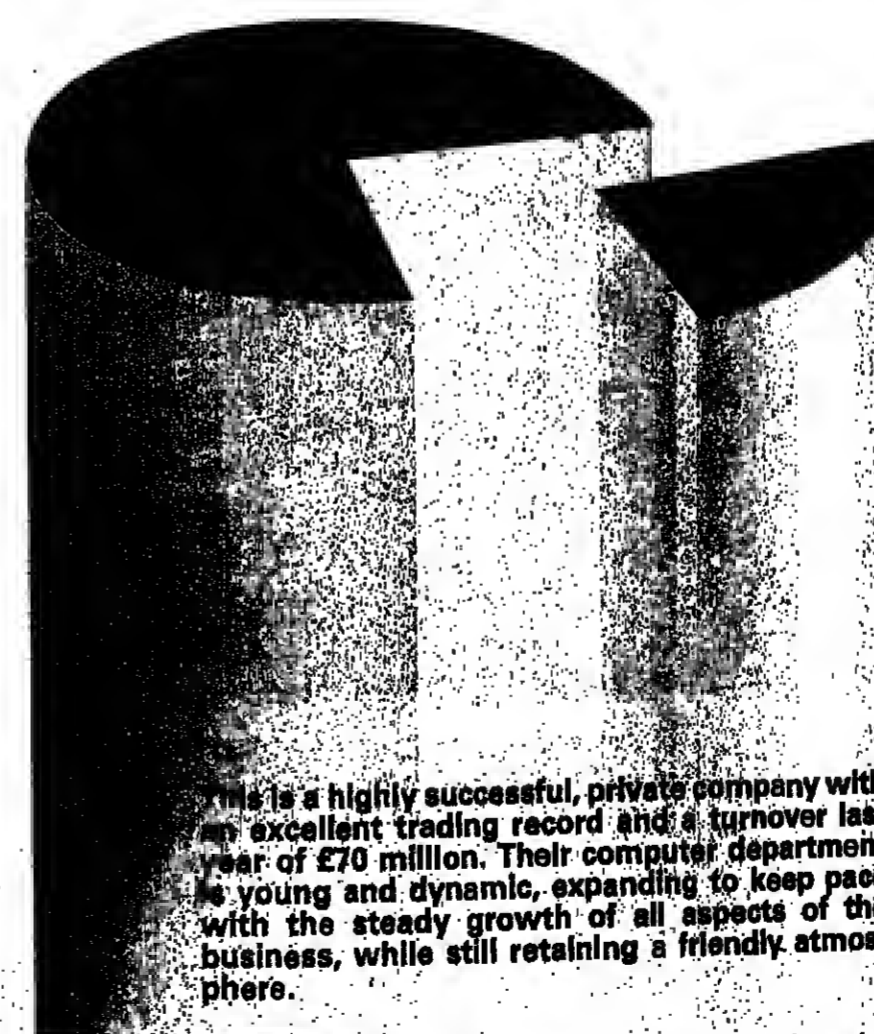
Your skills

- Assembler
- ACP/PARS or IPARS
- 4 years in DP

Ring TODAY for more details

01-836 8411 (24 hrs)

Computer
People
International



This is a highly successful, private company with an excellent trading record and a turnover last year of £70 million. Their computer department is young and dynamic, expanding to keep pace with the steady growth of all aspects of the business, while still retaining a friendly atmosphere.

SYSTEMS
SUPPORT
SERVICES LTD

Benefits offered by the company include twice yearly profit sharing, six weeks' annual leave, life insurance and free private patients plan.

01-903 9648

York House Empire Way
Wembley Middlesex HA9 0QQ

Go for a share of the profits—also

ANALYST PROGRAMMER

With Phillips Business Systems experience and the ability to communicate with all levels of management, you can have a challenging and rewarding career with this steadily expanding company. You will need to be self-motivated as you will be designing and implementing commercial systems and evaluating new packages, responsible directly to the DPM.

Interested applicants with other Business Systems experience will also be considered for this position.

Based in Hayes

Salary to £9.5K plus share

PROGRAMMERS

Our client is seeking ambitious programmers to work on the development of new projects in an ONLINE environment. If you have between one and three years' experience using ICL Cobol (Ideally ME29, TME or MTS) and are looking for a progressive career path in a friendly atmosphere this could be the opportunity you have been seeking.

Based in Wembley

Salary c£8.5K plus share

Ring or write to David Butcher, quoting ref. D307, now

Your 12 Months + DOS/VSE Systems Programming Experience

SOUTH LONDON

**SALARY NEG.
CIRCA £11K.**

... can be put to good use in an installation which at present comprises a most sophisticated twin IBM 4341 configuration, soon to be upgraded to 3083, where on offer is a real opportunity to gain in-depth working knowledge of VSE, CICS/DL1, with VM/CMS, in an environment that is also developing advanced SNA capabilities.

Our Client is a prestigious Group Management Services Organisation supporting some 200 companies within the UK and Worldwide - based in South London their current computer facilities include: Twin IBM 4341, DOS/VSE, VM/CMS, CICS/DL1, VSAM, SNA (VTAM, NCP, 3 x 3705 ...), IBM System 34/38, IBM displaywriters, IBM personal computers ... The Company's policy is to be at the leading edge of new technology, and implement new releases of hardware and software as they become available.

The Technical Support Group comprises Software Support Manager and two Systems Programmers. The third and open position requires an individual to specialise in VSE (under VM), CICS and DL1.

Depending upon your ability and experience to date, you may only need 12 months' experience of DOS/VSE systems programming with ASSEMBLER to apply. Additionally, prior exposure to CICS, DL1 and VM will of course be to both your own and our Client's advantage, although comprehensive training will be provided as necessary.

Initial projects will include: In-depth investigation into CICS usage to enable tuning and performance monitoring; major system conversion to utilise DL1; upgrading and support of around 20 other VSE products.

For further information or to arrange an initial interview please contact our Advising Consultant, **Ian Goldsmid** on **01-935 0671** during office hours, or **01-689 6367** some evenings and weekends, alternatively submit your Curriculum Vitae to the London address below.

Technical, Sales & Management Appointments

SCS

Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-935 0571/488 0481

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-238 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

SELOIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7151/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-768947

COMMERCIAL PROGRAMMERS AND ANALYSTS

£8K-£20K

One of the largest independently owned software houses in the U.K. is now looking to recruit highly proficient Cobol Programmers and Analysts for various locations throughout the south east.

You can expect to receive a higher starting salary than elsewhere and career progression second to none if you are prepared to work hard and give total commitment.

If you have two or more years' Cobol experience, ideally in the financial area, then contact us quoting Reference 6786.

SOFTWARE ENGINEERS

in REAL TIME • PROCESS CONTROL • COMMUNICATIONS

To £18,000 London and South East

Our client, a major systems consultancy part of a Blue Chip group, is looking to recruit senior and junior Real Time, Process Control and Communications specialists to meet its current expansion needs.

With one of the leaders in scientific/technical consultancy, systems design and implementation will be an integral function of your role.

Ideally you will be a graduate with at least two years' related experience in a high or low level language (Fortran, Pascal, Coral, RTL2, Macro or Assembler) with potential to take advantage of the long term career opportunities available. Reference 6787.

**Lloyd Chapman
Associates**

123, New Bond Street, London W1Y 0HR 01-499 7761

(3371)

Do you have a Sales Pedigree?

**IF SO, JOIN THE THOROUGHBREDS
AND EARN OVER £24K PER ANNUM**

Unrivalled in virtually every category of comparison, this company offers users a complete range of Information Systems and state-of-the-art software capabilities. To maintain their supremacy in

the U.K. we are assigned to recruit the following key sales personnel, all of whom will earn a 5 figure basic salary, substantial long term guarantees and company car or car allowance.

Large Systems Sales

**N. WEST, YORKS,
N. & E. MIDLANDS**

Living within a 50 mile radius of Leeds, you should have a 1st class record of achievement over at least 3 years in the sale of large, sophisticated mini computer systems to either end users or OEM's.

Major Accounts

MANCHESTER

The prime requirement is to have opened and developed Major Accounts negotiating at the highest levels. A positive and mature outlook combined with a high degree of self-motivation is essential.

OEM Sales

SCOTLAND & MIDLANDS

If you have a minimum of 2 years with a major manufacturer, do not ignore these opportunities. You will join an established and successful sales force which has the benefit of full local support both in Scotland and the Midlands.

To be a part of this winning team,
ACT NOW!—for a completely confidential discussion.

Telephone 061 236 1157 during business hours, or
Evenings until 9p.m. and weekends, telephone
JEFF WALTON on 061 962 0002 or **ROY TORRES** on 0422-823153

INTERFACE
RECRUITMENT & SELECTION CONSULTANTS LTD

Manchester House, 86 Princess Street,
Manchester M1 6NG. Tel: 061-236 1157

Senior Project Managers

(with a difference)*

Thames Valley

c.£15K+ car

Our client is a small systems house with a phenomenal growth rate - it will achieve over £1M of turnover in its first year of operation, with profits to match - and future business in the pipeline to maintain this momentum. The directors to whom the successful candidates will report are very experienced computer technicians with skills covering both hardware and software who can demonstrate entrepreneurial abilities of a high order.

These appointments offer quite exceptional opportunities, not only to work in a very stimulating environment but also to influence in a meaningful way the future development of the company.

Candidates must have a successful track record in completing multiple projects (utilising up to 10 analysts/programmers) on time and to budget which, preferably should include experience involving contract personnel.

Substantial familiarity with TP software is very

important, including DME, TME or CICS or ZILOG systems. COBOL is the most heavily utilised language.

Preference will be given to people with well developed interpersonal skills because it will be necessary to represent the company at all levels of client management. Knowledge of the Local Authority or Health Care market would be advantageous in the short term but there is potential to make use of a wide range of application experience.

Remuneration is negotiable but unlikely to be a limiting factor and the intention is to recognise and reward good performance with an above average package. Working conditions are good and plans are already in hand to move to larger premises as the need arises.

*To find out about the difference call Bruce Crammond on 01-631 4184 or send a detailed C.V. to:
A&A Consultants (Holding) Ltd., County House,
10 Little Portland Street, London W1N 5DF.

A&A

THE Middle East! Sun, sand and camels, the ancient lands of the spice trade. These are the traditional images, but recently the picture has changed.

Sun and sand are now joined by oil and monetary wealth. The greatest inducement for many the only one for leaving these green pastures for the pink deserts is personal enrichment. Money! We all want to need more of it but for every reward there is a task to be done and care is needed in its choice.

There is advice for those who wish to earn the high rewards the Middle East has to offer and there are warnings for those with a Macabreish outlook on the world. There is also a flavour of another lifestyle, both exuberant and exotic, with its own multi-national culture, that of the expatriate modern-day nomad.

The people are polite and generally courteous, though they lack our technological background, which is often mistakenly taken for stupidity and backwardness.

Fortunately a knowledge of Arabic is not necessary since most Arabs speak English.

The law is strict and penalties for more serious crimes often public. The most common offence among expatriates in Saudi Arabia resulting in a jail sentence is the selling of alcohol (not its consumption). For a sense of proportion, bear in mind that the sentences are longer than those imposed in the US in the days of prohibition.

Generally, there are classes of people for punishment purposes with less severe penalties going to the Westerner and the most severe to the Moslems.

Sand, sun, camels and money await you in the Middle East

But is it worth it? Declan Smith points out the pros and cons of Arabian life

It is imperative that you have personal transport. Car prices vary from one country to the next. In Dubai the prices are similar to the UK whereas in Saudi Arabia they are half that price. Your professional status is assured in the private sector and in Saudi Arabia this is particularly important.

Certain categories of expatriates are not allowed to take their families and diversions are underway to forbid these categories from owning or driving private transport.

The working week is generally between 40 and 48 hours, six days a week with Fridays off. Contracts can be accompanied (with your family, but lower salaries) or unaccompanied (usually shorter periods). Leave is variable but guidelines are as follows.

Unaccompanied personnel between 12 and 16 weeks in country get 1.25 days off for every week worked. Accompanied

contracts generally offer one month in every six. Salaries are between £14K and £24K dependent on location and conditions, with both extremes available for the same job. A good average for hardware or software personnel would be £19K, accompanied.

Many contracts start lower with yearly increments and accompanied status to follow. These can ultimately be very worthwhile. A rule of thumb worth remembering is that after a one year contract it can take three months to get your next one, so reduce your salary accordingly!

A common mistake is to assume you will meet a financial target in a certain time. Add an extra year for every three. Inflation becomes noticeable after the first year but more insidious is the growth in your expectations.

More expensive clothes and holidays becomes a part of your lifestyle. Your social

outings will become greater and your desire for the "bigger and better" will certainly grow.

Since your happiness and job satisfaction depend on the contract then let us look at the major types. The first is a contract with a UK based company. A contract of this type must be the safest of all. Most do not offer further employment on your return to the UK but you are in a strong position and they will try to retain you if possible.

The longer term prospects are good, promotion quite often going to those on-site, plus yearly increments in salary more than off-setting the lower starting figures.

Conditions depend on the size of the company but they all understand the UK norm both in creature comforts and the personnel department.

Importantly, if you have contracted to fulfil a particular function both sides understand the terms of reference and you will be employed in that function.

These last two should be thought about most carefully when dealing with companies from other parts of the world (particularly US) where you will be considered Third Country Nationals (TCNs).

The TCN contract requires explanation. This term applies to people employed by an Arab national

organisation which itself is in partnership with an expatriate company. Therefore the first nation is the Arab, the second is its partner and the third are all contract staff.

This is the worst possible situation to be in although the most profitable for certain categories, ie electronics engineers and microprocessor oriented software personnel. You are employed by an Arab concern (notably the oil ministries but work almost exclusively for the partner which provides its own permanent staff to control the operation and also supply most of the equipment.

You will be considered as part of a labour pool and not as a professional part of the organisation. Perhaps the greatest problem exists when action benefiting the partner (seller) is taken at the expense of your employer (customer). It is then that a blind eye can be an intolerable strain. Personnel are sub-divided as to nationality, with differing conditions applying to each (according to the home country's company standards). Americans classify the British and the Third World as the same (except for pay) whereas European companies treat all Westerners equally, with a separate deal for the Third World. This type of contract is definitely only for the rhinoceros skinned who need a

quick injection of money.

The final type of employer is in the private sector. This mainly consists of agencies for the major computer and peripheral manufacturers. This is arguably the best of all worlds. Here you have the greatest personal freedom and the greatest responsibility.

Accommodation ranges from villas (with the major banks) to flats found by yourself. Most computer companies now have agents in the Arabian peninsula. Salaries are negotiable and are always in package terms. Employees are often expected to act as the local expert on all software/hardware the agency sells, plus be a part-time salesman.

Your experience will broaden considerably with good prospects for promotion. Your fortunes are tied to those of the agency so consider the product line carefully. This is a boom area since protectionism forces companies to buy through local agents.

Social mobility is greatest here and a truly cosmopolitan lifestyle is enjoyed. The organisations are smaller and friendlier but do not expect the squash courts and facilities of the larger companies normally found in the previous categories.

These contracts are mainly accompanied and often for two years. If you like self-determination and are self-sufficient this is the one

for you.

The social security law are often very good though written copies are difficult to obtain. For example in Saudi Arabia, where women are discouraged from working, the law insists on maternity leave and nursing facilities to be provided by the employer. It is well worth your while obtaining a copy and reading them carefully.

Often companies will attempt to deny you these rights by disclaimer in your contract. These can be ignored since all contracts are bound by local laws. These laws are a two-edged axe, no unions are allowed nor any strikes. Collective complaints can be construed as industrial espionage with imprisonment until trial.

You find out about these jobs from agencies advertising in your favourite papers and often they really do have positions that are never directly advertised.

The bigger companies advertise directly. Unfortunately most agencies have no personal experience of the area and rely heavily on what they have been told by the employer. This can be highly coloured. Company facilities are often non-existent or public not private. Delays of up to three months from the first approach are to be expected.

Before you leave home check: The contract is in both languages and you are sure of the translation. The tax position. There are plenty of leaflets available and several banks have experts. Any points not clarified by your future employer should be assigned to the "worst case". Verbal promises of the "we are just changing xyz" kind should be ignored.

MIDDLE EAST JOBS

شركة أبوظبي العاملة في المناطق البحرية (ادما-أوبكو)

Abu Dhabi Marine Operating Company (ADMA-OPCO)

DATA PROCESSING JOB OPPORTUNITIES

ABU DHABI

We are a leading oil producing company operating in offshore areas of Abu Dhabi, United Arab Emirates. We have a twin ICL 2900 mainframe configuration and are in the process of moving from a DME to a VME operating environment, utilising TPMS and IDMS software for development of major applications. The configuration supports ICL Front End Processors with a large and expanding network of terminals centrally controlled by a Rascal System 185. Well-qualified and suitably experienced people are required to work as:

- 1) SHIFT TECHNOLOGIST
- 2) DATABASE CONTROLLER
- 3) DATABASE ADMINISTRATOR
- 4) SENIOR ANALYST/PROGRAMMER (Software & Communications)

Benefits include a high tax-free remuneration, good career prospects, free medical care in the UAE, free furnished family accommodation, paid home leave for the family and educational assistance. Candidates are invited to apply in English, giving full details of education, training and experience, supported by copies of relevant certificates separately to both the following addresses, not later than three weeks from the date of publication:

1. Senior Personnel Officer (CPA)
P.O. Box 303
Abu Dhabi, U.A.E.
2. Department of Petroleum
P.O. Box 9
Abu Dhabi, U.A.E.

Any applications which fail to comply with the above will be disregarded.



SAUDI ARABIA £25,000 TO £45,000 TAX FREE

We have been retained by one of the world's leading international companies who are urgently seeking to recruit:

THE PEOPLE:

ANALYST/
PROGRAMMERS

5 years' + EDP experience. Will be expected to work with minimum supervision.

SYSTEMS
ANALYSTS

8 years' EDP experience. Candidates may act as a team leader on Applications Development Projects. Supervisory experience essential.

SENIOR
CONSULTANTS

In-depth experience of Project Methodology structured design techniques or database design.

SCIENTIFIC
PROGRAMMERS

5 years' scientific EDP experience including optimization, modelling simulation, etc. using APL, GPSS, PL/1, FORTRAN and IBM OS/TSO or VM/VMS.

SYSTEMS
PROGRAMMERS

Minimum of 4 years experience supporting MVS/JAS 11, T.P. system, IMS/VS or CICS.

DATABASE
DESIGN
ANALYSTS

5 years' experience in designing BMP or On-line systems in a large IBM/OS or MVS environment. BTS, IMS access methods and ADF would be an advantage.

THE INSTALLATION

IBM 3081 - MVS JES II
IBM 4341 - DOS/VS
Software: TSO/SPF, VSAM, CICS IMS DB/DC, DL1
Languages: PL1/COBOL/MARK IV Technical PL II
FORTRAN

Age and marital status is immaterial, but a minimum of four years' relevant DP experience is essential.

Please contact Joanne Littler M.E.C.I. or Derak Crummeck for further details on 081-941 4319 or evenings 061-445 3022.

HEWITT MANAGEMENT SELECTION
2nd Floor, 6 Church Street
Aittrincham, Cheshire

DECUS ET TUTAMEN? ? ? FORGET THE FUNNY MONEY EARN 'RIAL' MONEY IN SAUDI ARABIA!

Urgent:
12-month assignments start June/July programmer analysts
★ PL/1 preferably with IMS, TSO/SPF
★ MVS CICS systems programmers
Up to 26K tax-free

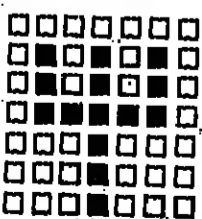
Package includes ★ air conditioned accommodation
★ use of air conditioned Japanese car
★ insurance/medical cover
★ 30 days' paid holiday
★ arrival/holiday/return air fares
★ end of contract BONUS (minimum 1 month's salary)

Contact

Bill Evans/Bill Torbitt on 0252-516141

TRIDENT COMPUTER SERVICES PLC
TRIDENT HOUSE
38/44 VICTORIA ROAD
FARNBOROUGH
HANTS

MONDAY-FRIDAY 8 am-5.15 pm



Trident are licensed by the Department of Employment as an Employment Agency and Employment Business
Licence Number: SE(B) 1400

ARE YOU THIRSTY FOR SUCCESS?

THEN AN OASIS IN THE SAUDI
COMPUTER MARKET CAN BE YOURS

Our client, a major Systems and Software House in the Eastern Province requires additional skills to satisfy their current workload. Programmers three or more years experience, Analysts/Programmers, Systems Analysts, Senior Consultants.
Basic skills required are PL/1, TSO/SPF and OS/VS. Experience of any of the following would be an advantage. COBOL, ADF, IMS, APL.

We are confident that our client offers one of the most generous packages available in the Gulf.



Telephone or write with your CV to:

Nic Poland,
TLP Leon House, High Street,
CROYDON, Surrey, CR9 3NH
Tel: 01-886 5636

Your number to the Middle East

We currently have several clients based throughout the Middle East who are urgently seeking the following people for both permanent and contract appointments.

TAX FREE £17,000-£30,000 p.a.
Plus free accommodation, car allowance, flights etc.

SOFTWARE SPECIALISTS
Ideally with 760 experience, PRIMOS and on-line DBMS systems for tuning, planning, generation etc.

ANALYST PROGRAMMERS
With COBOL and DB on-line experience. PRIME experience ideal but IBM or other mini considered.

PROGRAMMERS & ANALYSTS
With COBOL in either DOS/VS, OS or MVS environments. DB experience useful.

PROGRAMMERS & ANALYSTS
With PL1, IMS DB/DC, OS, TSO experience.

PROGRAMMERS
Experience of COBOL, VMEB, and IDMS. Min. age 25 years.

PROGRAMMERS
Experience of PRIME 650/750 FORTRAN and GRAPHICS. Min. age 25 years.

SYSTEMS PROGRAMMERS
MVS, JES 11, NCP, VTAM

SYSTEMS PROGRAMMERS
DOS/VS, CICS, DL/1

PROGRAMMER ANALYST
With experience of COBOL and ideally IMAGE QUERY & VIEW

SYSTEMS ENGINEER
For support and installation of banking systems throughout the UAE

For further information, please contact Colin Maslen on 01-493 2947 day or 0480 214493 evenings/weekends quoting reference 9970.

DALROTH

DALROTH & PARTNERS: 4 HALF MOON STREET, LONDON W1

SENIOR ANALYST/ PROGRAMMER

DOS/ICCF/CICS EXPERIENCE

BAHRAIN £20,000 p.a. (Tax Free)

The General Organisation for Social Insurance has recently taken delivery of an IBM 4331 computer running under SSX/VS.

A Senior Analyst/Programmer is required to lead a small team (4/6) Analysts/Programmers in the development of on-line applications using CICS with VSAM files. The Organisation has, during the last two years, developed a large database of information concerning insured workers on the island. This data is currently being maintained by batch application systems; the delivery of the IBM system will permit on-line access to the database in the first instance. It is planned to move to a database organisation together with on-line data entry, in parallel with the development of further application systems during the coming year.

The successful candidate should be educated to degree level and have an in-depth knowledge of CICS preferably gained in a DOS environment.

Reporting to the Computer Manager the Senior Analyst/Programmer would be expected to both supervise and train an experienced team of Analysts/Programmers in the effective use of CICS software.

An initial 1 year renewable contract would include free accommodation and five weeks' annual holiday together with a contract completion payment.

Applicants should write to the Computer Manager by 6th May in the first instance enclosing details of age, marital status, education, etc together with a brief history of career to date.

General Organisation for Social Insurance
P.O. Box 5319
Bahrain

Analyst/ Programmer

Jeddah
c.£21,500 tax free

One of Saudi Arabia's most successful international groups requires an Analyst/Programmer for a recently formed and expanding company based in Jeddah.

Reporting to the DP Manager, initially you will have a deep involvement in the conversion of an IBM 34 in a System 38 configuration. This will be followed by normal analyst/programming duties including the maintenance, tailoring and development of standard packages.

Aged 28-35, you will have been in programming at least 4 years, including a minimum of 1 year in both analysis and project management. Knowledge of RPG2 is essential and experience of RPG 3/DMS/DMS/MAPICS would be an advantage.

This is an open-ended career appointment which offers either married or single status conditions and above average benefits.

Please send your c.v., quoting Ref AP 1 K-95, to:
INTERNATIONAL MANAGEMENT
SELECTION LIMITED
121 High Street, Oxford OX1 1DD
Tel: Oxford (0865) 726127
(24 hours)

FOR
CLASSIFIED
ADVERTISING USE

DIRECT LINES

RECRUITMENT CONSULTANCIES

(01) 661 8787

DIRECT ADVERTISERS

(01) 661 8080

AMERICA UK EUROPE

**IBM
System/38****RPG III
to £15,000 + Benefits**

With expansion in the U.K., Europe and America, we need PROGRAMMERS and ANALYSTS with good IBM System/38 experience to work in our various offices on in-house projects, or alternatively bespoke work in client premises.

As one of the market leaders in the System/38 field we can offer you a highly rewardable career opportunity.

For further details contact:
Ray Slattery,
DATASENSE LIMITED, Blue Line House,
Angel Road, Edmonton, London N18 3BJ.
Telephone 01-803 8618.

datasense

(2284)

**IBM 4300 & IBM
System 38 Specialists****London &
Reading****£7,500 to
£16,000**

The CAP Group is one of Britain's leading information systems contractors.

Our branches in Reading and London have openings in the following positions:

SENIOR SYSTEMS PROGRAMMER
Salary to £16,000. Candidates will have taken responsibility for supporting a major installation and will have knowledge of most of the following: IBM 4300, IBM 3300, CICS, DOS/VSE, VM, MVS, VSAM.

BUSINESS ANALYSTS Salary to £16,000. Candidates will have a background of project development and 2 years minimum analysis experience. Knowledge of databases, insurance or System 38 desirable.

SENIOR DATABASE DESIGNER
Salary to £16,000. Candidates will have designed the database for a major system and will have working knowledge of some of the following: IMS, IDMS, DL/I, ADABAS.

PROGRAMMERS/SENIOR PROGRAMMER Salary to £9,750. Candidates will have a minimum of 2 years experience of IBM 4300 COBOL under DOS/VSE. Database knowledge desirable. Senior candidates will have produced program specs or taken supervisory responsibility.

Please reply initially to: Pat Cooper or Isobel Hart,
CAP London Commercial, 233 High Holborn,
London WC1V 7DJ. Tel: 01-831 6144.

CAP**Major
International
Bank**
City of London

A well known International Bank is continually updating its modern IBM computer functions. The latest phase is the implementation of "state of the art" communications products and protocols. Due to this latest stage of development two exceptional opportunities now exist for career minded, young computer professionals:-

**Systems
Analyst**

(Standards and Procedures)

**Up to £12,000 per annum
+ valuable benefits**

A Systems Analyst with good Data Processing experience to be responsible for all technical aspects within the planning and control department of the EDP Division.

The work includes project control systems, data administration and systems/procedures. The successful candidate will also develop, implement and monitor the standards defined within the EDP area. In the future he/she will also become involved in quality assurance, budgets and long term planning/control.

Applicants should have two/three years Analysis experience. A knowledge of banking and structured techniques would be an advantage.

**Systems
Programmer**

Implementation of "state of the art"
communications products and protocols
**Up to £11,000 per annum
+ valuable benefits**

Within this MVS/JES2 and VTAM/NCP environment the successful candidate will implement the latest communications products and protocols. This would probably be the first career move for a young, enthusiastic and flexible individual who still has a lot to learn about Systems Programming. The ideal candidate will have at least two years computing experience (one of which should have been as a Systems Programmer) preferably within an MVS/JES2 and/or VTAM/NCP environment.

In the future the candidate should be promoted to a Senior level position or alternatively move within other areas of the Data Processing Department.

For further details about these vacancies please contact
John Miskelly MBOS, on (01) 606 9473 today, or at home
tonight (after 7pm)/over the weekend on (01) 505 8251.
Alternatively, send a cv to the address below quoting CP/2.

JM Management Services Ltd., 102 Newgate Street,
London EC1A 7AP. Tel: 01-606 9473.

JM
Management
Services Ltd.**CONTRACTORS****IBM**

IBM PL/1 IMS JSP ANALYST/PROGRAMMER
IBM OS/MVS COBOL CICS PROGRAMMER

IBM MVS COBOL IMS/DB/DC DATA ANALYSIS SYSTEMS
DESIGNER

IBM MVS COBOL IMS DB/DC DATA ANALYSIS ANALYST/
PROGRAMMER

IBM MVS COBOL IMS DB/DC DATA ANALYSIS PROGRAMMER

IBM MVS COBOL IMS DB/DC PROGRAMMER

IBM OS PL/1 IMS DB/DC ANALYST/PROGRAMMER

ICL

ICL + IOMS ANALYSTS

ICL + ANY DATABASE ANALYSTS

ICL VME/B COBOL ANALYST/PROGRAMMERS

ICL VME/B IOMS ANALYSTS/PROGRAMMER

ICL EXP TECHNICAL AUTHORS

ICL ME 29 TIME RANGE COBOL MTS ANALYST/PROGRAMMERS

USER ENO ANALYST (ICL BACKGROUND PREF)

ICL GEORGE 3 COBOL ANALYST/PROGRAMMERS

ICL VME/B IOMS DATABASE DESIGNERS

OTHERS

HONEYWELL 66 COBOL IOS/TDS PROGRAMMERS-ANALYST/
PROGRAMMERS

SYSTEM 38 ALL LEVELS

DEC POP RSX11/D CORAL PROGRAMMERS

DEC POP AIMS ANALYST/PROGRAMMERS

APPLE/PET BASIC ANALYST/PROGRAMMERS

DATAPOINT OATABUS (JUNE) PROGRAMMERS

ANY MAINFRAME + GENERAL COMMERCIAL EXPERIENCE

SYSTEMS ANALYSTS

BURROUGHS 6800 COMMERCIAL EXPERIENCE SYSTEMS

ANALYSTS

MOTOROLA 68000 PASCAL ASSEMBLER SOFTWARE

ENGINEERS

VAX 11/780 VMS COBOL APPLICATIONS PROGRAMMERS

16 BIT MINI OPS SYSTEMS

16 BIT MINI PASCAL ASSEMBLER SOFTWARE TEAM LEADER

WANG VS COBOL PROGRAMMERS

PDP/DEC VAX CORAL 66 REAL TIME DEFENCE + MILITARY EXP

ANALYST/PROGRAMMERS

VAX VMS COBOL (MAY) ANALYST/PROGRAMMERS

VAX VMS FORTRAN (IMM) ANALYST/PROGRAMMERS

ANALYSTS + ACCOUNTING/ORDER PROCESSING EXP.

IBM SYSTEM 38 RPG 3 ANALYST/PROGRAMMER URGENT
VERY URGENT (WESTERN HOME COUNTIES)
PDP 11 RSX 11/M RTL2 PROGRAMMERS
VAX 11/780 VMS FORTRAN ANALYST/PROGRAMMERS
IBM MVS CICS SYSTEMS PROGRAMMERS

A Computer Search contract starts by calling
Debbie on (0442) 40761

Computer Search (Contracts) Ltd.,
Hamilton House, Marlowes,
Hemel Hempstead, Herts. HP1 1BS.

(0442) 40761**Computer
Search
Contracts**

(2463)

- ★ **PETERBOROUGH-BASED**
- ★ **SALARIES TO £10,500**
- ★ **ANALYST/PROGRAMMERS**
- ★ **DEVELOPMENT WORK**
- ★ **SCOPE FOR ADVANCEMENT**

Our clients are a market leader in their own particular field with a healthy turnover and solid commitment to the Data Processing facility.

Due to continuing development plans, particularly for the Manufacturing Systems areas, they require two further members of their Applications Development Team.

The current configuration consists of an HP 3000/44 with planned upgrade and utilises IMAGE QUERY VIEW and QUIZ together with FORTRAN and COBOL. A network of some 30 local and remote terminals is in operation.

Candidates are expected to be flexible and self-motivated with the potential to take on more senior roles quickly. Fortran and a manufacturing background are desirable.

In addition to the competitive salary, ample scope for progression is offered and cheap housing is available in the Peterborough area.

Contact either office

(2381)

**Targa Computer Recruitment**

8 Liverpool Street, London EC2M 7PH Telephone 01 263 9241 Telex 25801
Monica House, Broad Street, Birmingham B5 7AS Telephone 021 432 2045 Telex 34237

THE SCHUMANN CONSULTING GROUP

We are a respected consulting group with approximately 220 employees. For the past 11 years, we have been providing a wide variety of services in the fields of management, organisation and data processing on behalf of important clients at home and abroad. We are now considerably expanding our "system consulting" section and are therefore looking for several new members of staff.

We require:

SYSTEM SPECIALISTS

For interesting and demanding system-related assignments, both German and International, using IBM equipment. (Reference: 103).

You should have the following qualifications:

- Sound theoretical training with degree or equivalent in mathematics, computer science or engineering.
- Wide experience of system programming and generation.
- Practical experience in installation and management of DB/DC systems.
- Detailed knowledge and several years' experience in one of the following fields:
 - + Networks, especially SNA.
 - + MVS system programming and tuning with emphasis on VTAM.
 - + VM/CMS system programming and tuning with a DOS/VSE and MVS background.
 - + DDP, especially 8100.
 - + Data communications, especially CICS.
- Good knowledge of English and at least basic German.

Successful candidates will not only have the necessary professional experience, but also the ability to apply their particular experience as skilled consultants. They will also need flexibility, willingness to undergo further training at all times, with our support, as well as the drive and ability to work as part of a team.

For the right candidate, we are offering competitive salaries and results-oriented bonuses. Please write to us, quoting the above reference, and enclosing all relevant credentials. For further information by telephone, ask for Dr Boerner.

All applications will be treated with complete confidentiality.
Unternehmenberatung Schumann GMBH, Haselnußhof 1, 5000 Köln 71, W. Germany. Tel: Cologne 79 80 91 (-95).

(2385)

your appointments register

Programmers

NCR/IBM/COBOL to £15K
Insurance Banking London - H. Counties - N. Eng

COBOL/PL1/OS/CICS/IMS to £13K
Commercial H. Counties - Midlands - Manchester

ICL/ON-LINE EXP to £12K
COBOL Surrey

HONEYWELL to £12K
Systems Programming experience Middlesex

DATA GENERAL ECLIPSE to £11K
COBOL Leicestershire

IBM/RPG2 to £12K
Financial/Insurance Home Counties

IBM to £16K
System exp. Essex

ICL/VMEB or K to £11K
Financial Surrey

IBM/UNIVAC/COBOL to £12K
On-line/Data base Surrey

NCR 8200 to £14K
Financial SW LONDON

Analyst/Progs

BURROUGHS/COBOL to £14K
Commercial Surrey

IBM 34/38 to £15K
London/Home Counties/North

DATA GENERAL/COBOL to £11K
Commercial/Mini experience London

IBM/COBOL to £10K
Scotland

Hardware/Support

APPLICATIONS ENGINEER to £15K
Peripherals Support/Microprocessor Systems London plus International Travel

SERVICE ENGINEER to £20K
DEC/VARIOUS MINIS Middle East

TECHNICAL MANAGER to £15K
Disk Drive Technology Sheffield

TECHNICAL AUTHORS to £ Neg.
UK + Europe

CAD/CAM/GRAPHICS to £15K
Home Counties

ENGINEERS to £15K
Torch Micro/Networking London

IBM/CL to £12K
Stock Control/Commodity Control London

CAD/CAM to £16K
Real time - Modelling Man. Essex - South West

IBM/BURROUGHS to £15K
Commercial Accountancy London/Surrey/Manchester

IBM SYSTEM 34/38 to £13K
Masplac/Rpg Sussex

ICL/ME29 to £16K
Commercial Design Berks.

IBM SYSTEM 34/38 MAAPICS to £13K
Sussex

Systems Analysts

IBM/CL to £12K
Stock Control/Commodity Control London

CAD/CAM to £16K
Real time - Modelling Man. Essex - South West

IBM/BURROUGHS to £15K
Commercial Accountancy London/Surrey/Manchester

IBM SYSTEM 34/38 to £13K
Masplac/Rpg Sussex

ICL/ME29 to £16K
Commercial Design Berks.

IBM SYSTEM 34/38 MAAPICS to £13K
Sussex

Software Engineers

CORAL/PASCAL/MASCOT/C to £13K
Communications Glos/Hants/Sussex/Midlands/Manchester

FORTRAN to £12K
Finite Element/Graphic Display Home Counties

MILITARY SYSTEMS/RADAR to £11K
Coral - Masplac Hants/Surrey - Essex - S. West

PDP/VAX/INTEL to £13K
Telecomm - ATE Surrey/London/Kent

COMMS/TELECOMS/MOD to £14K
Mini/Minicomputers E. Anglia

HP3000/INTEL to £12K
CAD/CAM/ATE Home Counties

TERMINAL EMULATORS to £15K
C/Assembler London

Snr Appointments

PROJECT LEADER to £15K
Military Systems Berks/Hants

SALES EXECUTIVES to £25K
Micro - Minis Peripherals, etc UK + Overseas

CONSULTANT to £15K
Military/Defence Berks

SYSTEM PROGRAMMING to £15K
Digital/RSTS/E, SASIC Bucks

TEAM MANAGER to £17K
Computer Modelling S. London

ICL/PRE- AND POST-SALES SUPPORT to £16K
Berks.

SENIOR SOFTWARE ENGINEER to £18K
Software capabilities/Technical consultant E. Anglia

You can be sure of hearing about many opportunities like these, U.K. and abroad, when you make Sloangate your first choice. Take the next step in your career with us!

telephone 01 549 9236

Sloangate
The Appointments Register

SLOANGATE LIMITED
214 KINGS ROAD
KINGSTON-UPON-THAMES
SURREY KT2 5HX

VM Software Designer

To £15K

East Anglia

We are offering an exciting career opportunity to someone to provide the technical leadership to develop a new VM/CMS derivative of a product currently based on TSO. You should be able to generate a VM/SP system, set up CMS and be conversant with CMS I/O routines, screen and interrupt handlers. You are probably now a Systems Programmer keen to use your imagination and do a job which calls for creative flair.

You will bring additional experience to a highly capable team of Systems and Applications Programmers developing relational database management and applications software packages for IBM machines. These products, written in PL/I and Assembler, are now available on MVS/SP3 with TSO and we are extending them to VM/CMS, CICS and DOS/VSE environments and adding extra graphics, communications and applications features.

Metier is a British owned company whose project management systems are worldwide leaders. Our research and development is centred in Ipswich where we have recently installed our own BASF 7165 dedicated to development work. We offer:

- Competitive salary • BUPA and Life Insurance
- Pension Fund • Relocation assistance

Ipswich is an attractive area offering low-cost housing, good schools and an excellent lifestyle.

If you are interested in an exciting and challenging career and are seeking opportunity and responsibility, please contact:
Mr. Roger Staines, Metier Management Systems Ltd.,
15-17 Fore Street, Ipswich, Suffolk, IP4 3JW.
Tel: 0473 219661.

METIER

HOWARD

EUROPE

Systems Analysts, Managers, Project Leaders
Manufacturing, Distribution or Warehousing Systems

Systems Project Manager
Honeywell L6/66 - Financial

Analyst Programmers
Honeywell L6/66 (COBOL, Statistical Forecasting) or HP3000

Analyst Programmers/Tech Author
ICL COBOL VME-B, Programming, Training and Writing, French Knowledge and OS/VS A plus

Programmers
IBM CICS, COBOL, DL/I

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

Programmers
Belgium, Holland

IBM SYSTEM 34

WITH 2+ YEARS DP EXPERIENCE AND RPG II

Permanent positions as Analyst/Programmer in Kingston, Surrey, offering excellent working conditions and salary circa £12,000 p.a.

ADABAS/NATURAL

Contracts offering excellent working environment in Central London circa £450 per week.

Please write to AHMAD FAROOQ or phone him on 01-947 9544 (office hours), 01-394 2921 (evenings/weekends)



Fissions Limited
138 Alexandra Road
London SW19 7JY
Tel: 01-947 9544

(3470)



The Software Company

PAYROLL SALES EXECUTIVE

MAIDENHEAD, BERKSHIRE

Realistic on target earnings £35,000 + quality car (Rover, Volvo, Audi)

1982 saw MSA (Management Science America) Inc., pass the \$100 million revenue mark, with the U.K. Company growing by 140%. This exciting growth rate, making MSA the world's leading independent supplier of packaged application software, has been achieved partly by the supremacy of its products and partly by a policy of recruiting high calibre professionals.

The MSA Payroll System is one of the most widely used in the industry due to its reliability and flexibility, providing management with a proven method of monitoring and controlling payroll costs.

We are looking for a successful Sales Executive EITHER with experience in selling payroll OR with experience in selling other financial software and the potential to sell payroll. In either case, we are looking for an established Sales Executive with a first class track record.

Your ability to negotiate at a senior level and your disciplined and professional approach to selling will have ensured that you are already successful and enjoying high earnings. We suggest that you build on that success by joining a company whose reputation and growth are unrivalled, and where plans for 1983 and beyond will ensure the best possible career prospects.

It's likely that, because of the qualities we seek, you'll be in the age range 28-42.

Please contact MARK IRENS to discuss this top sales opportunity. Ref: CW2804/1

HUTTON EXECUTIVE SELECTION LTD.
31 PALACE STREET
LONDON SW1E 6HW

Telephone: 01-830 0434 (24 hours)

(3444)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

CONSULTANCY

LONDON

circa £16,500 + car

A leading international consultancy has openings for top-calibre D.P. professionals who have either good all-round commercial applications experience, or specialised experience in international banking or insurance.

You will need to meet all the following requirements:

- (1) Good degree.
- (2) Perfect communication skills and professional manner.
- (3) 25-32 years old.
- (4) Proven track record, either in a variety of application areas or in international banking or in insurance.

You will mainly be involved in pure consultancy, but also in project management. This is seen as a logical career step for high fliers who have proved themselves in a user environment and are ready to move forward.

For further information, please contact MARK IRENS quoting reference CW2804/3

HUTTON EXECUTIVE SELECTION LTD.
31 PALACE STREET
LONDON SW1E 6HW

Telephone: 01-830 0434 (24 hours)

(3444)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

PROJECT MANAGER — PLYMOUTH

RETAIL BANKING SYSTEMS

£12-£13K + two-litre car
Discretionary 20% performance bonus

Our Clients are market leaders in financial terminal systems with an excellent and prestigious user base. They have an immediate vacancy based at a client's offices in Plymouth with an average of one day a week spent in London.

The position is to project manage a turnkey "front and back office" Retail Banking System. This includes writing and documenting the System's applications and operating software, and installing and commissioning the hardware. A staff of eight, including two Team Leaders, report in.

The prerequisites for this position are as follows:

- ★ Resident or prepared to relocate within easy commuting distance of Plymouth.
- ★ Proven in-depth project management experience of similar or larger sized projects is essential.
- ★ A technical (programming) background before progressing into systems and project management.
- ★ Experience of similar projects, either in terms of industry (High Street banking; building societies) or technical content (local area networking; distributed data processing) are obviously very useful but not essential.

Career progression with the Vendor, one of the largest computer manufacturers in the world, is assured with the immediate position having the added attraction of location. Please telephone BOB BOWER, the Advising Director, to arrange an interview. Written applications should include a detailed C.V. Ref: CW2804/2

HUTTON EXECUTIVE SELECTION LTD.
31 PALACE STREET
LONDON SW1E 6HW

Telephone: 01-830 0434 (24 hours)

(3444)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

SALES ACCOUNT MANAGEMENT

HOME COUNTIES (LONDON BASED)
LARGE RETAIL AND INDUSTRIAL ACCOUNTS

Basic £12K — on quota £24K plus negotiable guarantee to £24K
Sierra two-litre GL or similar

Local area networks and other types of distributed data processing and communications related systems are arguably the most dynamic facets of the Computer Industry today.

Our clients, one of the largest computer manufacturers in the world, are market leaders in these areas and are looking to expand even further in the U.K. To that end, they have an immediate requirement for three Account Managers based in London and with responsibility for both geographical territories and portfolio accounts.

Experience of selling similar products to large accounts is of course ideal but equally important is a proven successful sales track record over a number of years. To that end, it is unlikely that anyone under the age of 30 would be sufficiently experienced.

Our clients offer a superb career for the successful and several of their exalted salesmen are earning considerably larger sums than the advertised figures. If you are interested in a position that is technically "state of the art" and is both demanding and rewarding, then please contact BOB BOWER as soon as possible to arrange an interview. Ref: CW2804/4

HUTTON EXECUTIVE SELECTION LTD.
31 PALACE STREET
LONDON SW1E 6HW

Telephone: 01-830 0434 (24 hours)

(3444)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

01-830 1554



OFFER OUTSTANDING OPPORTUNITIES FOR UNIVAC CONTRACT PROFESSIONALS AT A NUMBER OF LOCATIONS IN EUROPE & USA

WE NEED:

PROJECT LEADERS

(Eight years' UNIVAC 1100 COBOL experience and six years' DMS or four years' DPS)

TEAM LEADERS

(Six years' UNIVAC 1100 COBOL experience and two years' DMS or TIP or DPS)

SENIOR PROGRAMMERS

(Four years' UNIVAC 1100 COBOL experience and 18 months' DMS or TIP or DPS)



PROGRAMMERS

(Two years' UNIVAC 1100 COBOL experience and six months' DMS or TIP or DPS)

FOR THE USA ONLY WE NEED:

A TELECON CONSULTANT SYSTEMS PROGRAMMERS (OS 1100 Internals)

SYSTEMS PROGRAMMERS (DMS)

If you qualify and can be available within the next three-... four months, please contact:

ERIC OLDHAM
ALMERS PRIORY
ALMERS ROAD
LYNE
Nr CHERTSEY
SURREY KT16 0BH
Telephone Chertsey (09328) 66812

(3378)

PROJECT MANAGER

SALARY PACKAGE UP TO 20K
+ CAR

LONDON AND BRISTOL

Our clients, a well-respected software house with offices in the City and in Bristol are seeking to employ a professional project manager who will take over the running of a number of individual project teams and act as an interface with their clients.

This position is regarded as an important appointment and applications are invited from candidates who have a strong data processing background coupled with a high level of commercial awareness. Previous experience with a software house would be an advantage but is by no means a prerequisite.

Our client works mainly on a variety of commercial systems and includes many well-known "blue-chip" companies amongst its past and present clients.

An excellent benefits package, a high salary and a company car are offered as reward for this highly challenging and interesting post.

For further information please ring Chris Morrow on 01-837 0451 quoting reference number RC8/83.



TOTAL
SELECTION
LIMITED
388 City Road, London EC1Y 2QA
01-837 0451

(3405)

THE UNIVERSITY
OF SUSSEX

Statistical Adviser/ Senior Programmer

In the Research Data Analysis Unit
in Arts and Social Studies, from July
1, 1983 at an early as possible
date.

The person appointed will need a
thorough knowledge of the use of
statistics in the social sciences,
together with experience of pro-
gramming and the use of statistical
packages. Responsibilities will in-
clude advising on the selection
and use of library programs for sur-
vey and statistical analysis and
some programming duties. The pro-
gramming languages in use include
Pascal, Fortran and Algol 68. The
unit uses the 3 local VAX 11/780
computers running under VMS, and
regional machines at London and
Manchester.

Salary will be in Range 1A of the
Other Related Faculty salary scale,
currently £8,376 to £11,056 per
annum, plus membership of the
University Superannuation
Scheme.

Further particulars and application
form, returnable by May 18 1983,
are available from the Personnel
Office, Sussex House, University of
Sussex, Brighton BN1 9RH
(Brighton 80655, ext 424. The
Admission quoting reference 434/2.)

(3410)

PROGRAMMERS

Required for the development
of systems and should have
experience in IBM, COBOL,
CICS and PL/I. Ref. 6026

Required for new Honeywell
installation at least two years'
experience in COBOL, TOS
OS 11 and Database. Ref. 6034

Our clients, based in South
Hampshire, offer comprehensive
terms and conditions of
employment including reloca-
tion expenses where appro-
priate. Salary negotiable
according to experience.

Please write giving full details
to:
Tom Barrow Technical Division
TASCORP LTD (Apt)
46 Leigh Road, Eastleigh, Hants
Tel: 0703 841 421

(3440)

CONTRACTS

EIGHT

Force Eight Computer Services is an established software house divided
into three areas: Contract Recruitment, Project Management
and Training.

Below are a selection of the immediate contract positions we have at
present. If you are an experienced and professional contractor available
or becoming available soon, or should you wish to discuss the possibility
of becoming a contractor, please telephone Sandra Monks of our
Resources Division on 01-680 3761 for further information or send your
full c.v. which will receive our prompt attention.

Programmer/Analysts ICL 2900 VME/B
System Analysts IDMS COBOL

We have a number of vacancies in this area all at different levels for six
month contracts.

Systems Programmers IBM MVS/SP ASSEMBLER

Senior Programmers BURROUGHS 6700, 6800
Analyst Programmers DMS2 COBOL, GEMCOS
Five years' Burroughs experience essential for six month contracts.

Programmers IBM DOS/VSE
COBOL EASYTRIEVE

Force Eight Computer Services

8 Mint Walk, Croydon, Surrey, CR0 1EA.

(3421)



TOP CAREER OPPORTUNITIES WITH DMW PRODUCTS DIVISION James Martin's FOURTH GENERATION EUROPEAN CONSULTING COMPANY

Now two years old, the DMW Group Europe has achieved a unique position in the market
place. The Products Division supports INFORMATION ENGINEERING, the complete
systems development methodology, with their products, responsible for research and

development, marketing and the implementation of Fourth Generation tools throughout the
world. Our initial management team is in place. We can now offer excellent career
opportunities for people with the right skills.

PRODUCT SUPPORT

CONSULTANT £12,000-£15,000 - CAR - BONUS

The Product Support Department is responsible for the pre-
and post-sales support tasks of demonstrations, training and
customer advice. As a new department it must also produce
quality documentation, course and seminar material, and
expand to provide product installations.

The individual capable of meeting this variety of
requirements must have a sound IBM technical background
(including programming and analysis), be an effective
communicator, and understand business and user needs.
The successful candidate will be interested in fourth
generation language products.

THIS COULD BE YOUR OPPORTUNITY TO INFLUENCE THE PRODUCTS REQUIRED
TO MAKE EFFECTIVE USE OF FOURTH GENERATION TECHNOLOGY.

DMW Inc. was founded in 1971 in the U.S.A. Database Design International Inc. was
founded in 1979. These two companies, together with their European counterparts which are
European owned, form the DMW Group with locations in London, Amsterdam, Ann
Arbor, Bernabè, Milan, Rome, Singapore, Stockholm, and Sydney.

PRODUCT DEVELOPMENT

The Product Development Department is responsible for the enhancement, design and development of DMW's
Fourth Generation language products. These individuals will be involved in the development of advanced features,
new versions and will form part of our highly skilled team.

SYSTEM SOFTWARE ENGINEER UP TO £16,000 pa
The successful candidate will have at least 4 years
experience of IBM systems programming or product
development in ASSEMBLER. Knowledge of MVS,
OS, experience of DLI, CICS or IMS/DC and an
interest in the development of fourth generation
technology is necessary.

PROJECT LEADER UP TO £14,000 pa
The individual will have had at least 4 years
computing experience in an IBM environment.

Positions include a flexible pension scheme, health insurance, generous benefits and overseas
travel.

Please send your resume to: Maryjo Scrivani
Product Support Manager, The DMW Group Europe
Spa House, 11-17 Worple Road, London SW19 4JS
Telephone: 01-946 9109

(3338)



Opportunities with Leading Software House

As one of the foremost computer
systems companies in the U.K. we are
now able to offer more rewarding and
challenging career opportunities on
interesting and worthwhile projects.

All the posts are permanent. The
package includes profit sharing scheme,
free lunches and a subsidised pension
and permanent health scheme.

Apply in writing to: Mrs P. M. Mole,
Personnel Officer, Leasco Software
Limited, 150-152 Bath Road,
Maidenhead, Berkshire SL6 4LD. Or
telephone (0628) 23381 for further
details.

ICL • COBOL • ME29 • TME • IDMS
£10,000-£16,000

Project Manager
With strong technical background must be capable of
pre- and post-sales support activity without
assistance.

Support Technicians
Ability to provide demonstrations of product to
prospects, implement product on customer site and
offer subsequent support.

Design Consultant
Capable of interfacing software products to ME29, in
depth technical knowledge required. Experience of
ICL cash receipting, terminals an advantage.

DEC • VAX • VMS • BASIC + 2
£7,250-£14,000

Senior Consultant
Ability to co-ordinate program development, system
testing and documentation.

Programmer/Senior Programmer
Within our command control and communications
division we are seeking to recruit a graduate
programmer or senior programmer (maths/physics
degree) with graphics knowledge.

Programmers
To join our development team. Minimum of two
years' experience.

Systems Programmers/
Consultants £9-£12,000

Applicants should have:
At least four years' systems programming
experience. Real-time operating systems experience.
Assembler and preferably COBOL.
Knowledge of Ferranti Argus would be ideal but not
essential.

Principal Consultants £11,000+

These posts require experience of pre-sales activity
and the ability to accept responsibility for major
projects from initial customer negotiations, through
implementation to final acceptance.
Applicants should have:
At least eight years' experience.
Project Management and leadership experience.
Real-time systems experience.
Experience of working within fixed price contracts.

Graduate Programmer £7,000+

Maths/Physics Degree. At least two years' experience.
Graphics knowledge.

(3465)



DALROTH

(Florida/Maryland)

DEVELOPMENT PROJECT

Salaries \$25,000-\$50,000

plus per diem, settling-in allowance, relocation, medical insurance, etc.

- PROJECT LEADERS/TEAM LEADERS
- SYSTEMS ARCHITECTS
- SENIOR SOFTWARE DESIGNERS/PROGRAMMERS
- TECHNICAL & SOFTWARE PROGRAMMERS

Our client, a major U.S. Corporation, is responsible for the development of a new sophisticated Nationwide Switching System to provide communications facilities between the major U.S. airlines.

The system is based on Perkin Elmer hardware and has nine major nodes supporting both Synchronous and Asynchronous transmission between terminals and hosts.

For all applicants, experience is required in communications, ideally related to Computer Communications, Networking, Packet or Message Switching. Specific experience on any of the following would be ideal:

SDLC, ATA, IATA, X25, IPARS, PARS

Work on systems such as the following would also be very useful

PTARMIGAN, SYSTEM X, MASCOT, BATES, BRUIN, EPSS/PSS

Positions will require knowledge of processor operating systems and modification to accommodate real-time processing and application of the database management system to network control centre requirements.

For the programming requirements, language experience should include Assembly and use of high-level languages such as PASCAL, C, CORAL 66 and COBOL.

Client interviews will be conducted in LONDON during week commencing May 8

For further information please contact Jenny Delrymple-Hey or Ian Murray-West quoting Reference Number 9972. Telephone 01-493 2947 (9 am-9 pm) or weekends respectively Beaconsfield (04946) 4579, Milton Keynes (0908) 563415.

DALROTH & PARTNERS LTD., 4 HALF MOON STREET, LONDON W1

VIDEOM

We have made a name for ourselves around the world designing and manufacturing a unique range of computers and terminals for use in complex computer networks.

We are British. We are successful and growing fast. We need bright and enthusiastic people to grow with us.

We need

Programmers
Programmers with at least 2-3 years experience in Real-Time micro-processor, assembler programming.

If you can fulfill the above requirements and want a challenging job, telephone Henry (04912) 78427 Sylvia Quadey or write to Videom Ltd, Newtown Road, Henley-on-Thames, Oxon.

UNIVERSITY COLLEGE LONDON

Department of Computer Science

Applications invited for an 'Informal' Lectureship in Computer Science (ICAD) or a new MSc. course jointly with Electronic Engineering has been approved. Candidates should have experience in one of VLSI, graphics, software engineering or systems software.

Post is available from October 1, 1983. Salary on Lectureship (1987-88) £13,000 per annum plus £1,100 London Allowance. Applications (in form) to Assistant Secretary (V), University College London, Gower Street, London, WC1E 6BT. From whom further particulars may be obtained. Closing date for receipt of applications May 20, 1983. Please quote reference 1/1 in all correspondence.

BEDFORD COLLEGE OF HIGHER EDUCATION

APPLICATIONS PROGRAMMER FOR COMPUTER CENTRE

The person appointed should have previous experience in one or more high level languages, and will be responsible for the provision, development and maintenance of information on computer application packages.

Salary Scale AP4 £6,873 to £7,545.

Application forms and further particulars available from the Senior Administrative Officer, Bedford College of Higher Education, Gower Street, Bedford, tel. Bedford 45161 ext. 233.

SCANIA

Scania is the commercial vehicle division of the Swedish Saab-Scania Group. Scania is one of the world's most successful vehicle manufacturers and builds maximum capacity vehicles which are sold in more than sixty markets around the world.

Scania (Great Britain) Limited is a subsidiary of the Scania Division and is responsible for marketing the company's products in the United Kingdom. Recent rapid expansion and further planned development has created a vacancy for a

DP MANAGER

The successful applicant will implement, maintain and operate third party software on a new IBM System 38. The company is a first time computer user and education and support of user departments will be required. There will be international contact with other computer installations of Scania Division. At a later stage the DP Manager will initiate and participate in the development of future applications.

Candidates will have several years experience as an analyst in a real time environment - ideally System 34 or 38 and RISC - together with the business understanding and initiative to make the most of this exceptional opportunity.

The position will be based at Milton Keynes. A competitive salary will be offered together with a company car and other benefits commensurate with an appointment of international company standard.

Please write or telephone for an application form to:-

Mr. S. L. Perkins
Assistant Company Secretary
Scania (Great Britain) Limited
Tongwell
Milton Keynes
Glebe, MK15 8BH.
Tel: Milton Keynes (0908) 814040

Program
SCANIA

SURREY COUNTY COUNCIL REDHILL TECHNICAL COLLEGE

Applications are invited from men and women for the following appointment tenable from 1 September 1983.

Lecturer I

£5,601-£9,513 p.a. (including Area Allowance) according to qualifications and experience in computing and systems analysis, to join an enthusiastic team teaching at a variety of levels. Present facilities include main-frame terminals, mini-computers and micro-computers. Ability to teach micro-computer applications and to supervise departmental computer facilities essential. Ability to assist with Mathematics and other computer-related subjects an advantage.

Further details of the post and of relocation assistance together with application form may be obtained from the Staff Officer, Redhill Technical College, Getton Point, Redhill, Surrey (tel. Redhill 64717).

APPLE COMPUTER SALES

We are HeyDen Data Systems, North-West London Apple dealers with additional specialised product of our own and exclusive European agencies. Our sales business are a strong growth area so if you are self-motivated, have experience of business packages for Microcomputers and are looking for a rewarding opportunity in this challenging area, we should like to hear from you.

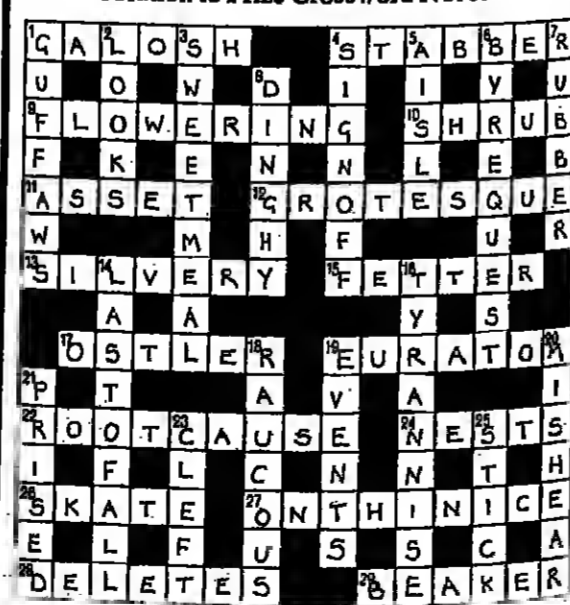
Our company offers real scope for drive and initiative as well as providing a strong base for Sales Operations.

Salary and commission package plus Car.

Phone or write to: Peter Williams, HeyDen Data Systems, Spectrum House, Hillview Gardens, London NW4 Tel: 203-8771.

CROSSWORD

Solution to Prize Crossword No. 39



THIS month's first prize goes to Joyce Beattie and Richard Belfour, whose joint entry wins £10. Both work at Hallborens in Arbroath. Mrs Beattie is a data control clerk and Mr Belfour is a computer operator. Prizes of £5 each go to Brian Howlett, a research fellow in child health at the University of Bristol and to Beryl Mackay, a partner in Sheffield-based SPSC Data Entry Services.

SENIOR SALES

N.W. ENGLAND SCOTLAND

Substantial Basic Salary : Target Earnings £23,000+

This is an opportunity to join a well-established manufacturer of DDP and Information Systems having already several hundred installed sites in England and Scotland.

Their current expansion programme determines the need for two additional Senior Sales Executives. Successful candidates must be able to demonstrate sales results in business computer systems and their commercial application, and also be capable of managing a large territory which will include certain major accounts.

A substantial basic salary is payable with highly achievable target earnings of £23,000 in this exciting growth area of the computer market-place. Guaranteed earnings and a company car or generous car allowance will be provided.

If YOU measure up to this challenge,

ACT NOW! Telephone

Roy Torres-0422 823153

Jeff Walton-061-962 0002

(Evenings & Weekends to 9.00pm)

Or call our office 061-236 1157 during normal working hours.

INTERFACE
RECRUITMENT & SELECTION CONSULTANTS

Manchester House, 36 Princess Street, Manchester M1 6NG. Tel: 061 236 1157.

Project Leader

Berkshire to £14,000

Our Client

A well established, profitable manufacturing Company supplying high-technology engineered products to the petrochemical and associated industries. Turnover £30m. Eight overseas trading and manufacturing facilities. Aggressive growth plans.

A major investor in high technology, including CAD.

DP Dept

Consistent profitability and growth has been achieved by the implementation of advanced operational and management information systems. Extensive real time network supporting database systems. IBM mainframe in the Company headquarters at Slough. Current activities include the development of standard software for installation in all subsidiary companies.

The Vacancy

An outstanding opportunity for an experienced DP professional to join the existing team. He/she will lead a team of Analysts and Programmers in the investigation, design and implementation of a variety of advanced information systems.

Applicants must demonstrate proven experience in the field of project control working to formal standards and time-scales.

Reporting to the Systems Manager, the successful applicant will be responsible for all aspects of team performance, development, motivation and control.

Starting salary of up to £14,000.

Performance review after six months plus promotion to Project Manager.

Five weeks' holiday.

Relocation scheme where applicable.

Other large Company benefits.

Please send full career details to the Confidential Reply Service, Ref: AEP 416, Austin Knight Limited, 66a High Street, Egham, Surrey, TW20 9BY.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter.

Royal County of BERKSHIRE

TECHNICAL COMPUTER PROGRAMMER

ES382-EB32S
Experienced programmer required to support a wide range of engineering design and technical information systems to work in a small group providing a computer service to highway engineers, including writing, maintaining and giving advice on the use of computer programs. Five micro-computers, ten interactive terminals, a batch printing terminal, a digital plotter and graphics terminal are located in the Department. Central computer is ICL 2076 and carries a full range of peripheral equipment. Applicants should have a minimum of two years' experience in one or more of Fortran or Cobol. A degree or professional qualification is desirable but the essential qualities of self-motivation and practical approach will be given equal weighting. Application forms from the County Surveyor, Shire Hall, Shillad Park, Reading RG2 8XG. Tel: Reading 878444 Ext. 4621.
Closing date: 5 May.

Berkshire County Council is an equal opportunity employer and all applicants will be considered solely on the basis of suitability for the post irrespective of race, colour, sex, marital status or disability.

IBM CONTRACTS LONDON

Database Administrator, IMS/DL1
2x CICS DL1 Systems Programmers
2x Senior MVS Systems Programmers
2x DL1 Programmers
IBM System 34 MAAPICS Programmar

Telephone Loraina Maddison
on 01-948 5922 (office hours)
Walton-on-Thames (98) 4552
(evenings/weekend)

KPG

ICL COBOL ANALYST/PROGRAMMERS

NORTH LONDON AND ESSEX
SALARY up to £12,500

To join an expanding, well-established software house. Knowledge of either DRS, ME29, 2903 preferable.

The successful applicant will be involved in liaison with customers on systems design, programming and implementation, etc. We are recruiting for both our Wither and Waltham Cross offices.

In the first instance please contact Maureen Parker on: Waltham Cross 33208.

BRUSSELS - HONEYWELL LEVEL 8 or 66 WITH COBOL

ANALYST PROGRAMMERS - a. £18,000
SENIOR TECHNICAL SPECIALIST - a. £17,000
PROJECT MANAGER with experience of financial systems - a. £19,000

Large company benefits and relocation package paid for all overseas assignments.
For an application form, please send your name and address to: George A. Lord, Recruitment Consultants, 221 High Street, London W3 9BY.
Telephone 01-902 8047 (24 hours).

beechnwood
APPOINTMENTS REGISTER

PLYMOUTH HEALTH AUTHORITY

Computer Manager

Scale 9, £8,367-£10,377 (plus proficiency allowance)

Following the promotion of the present postholder a Manager is required for this expanding division. The current postholder is based on an ICL 2903 with a number of microcomputers. Substantial expansion of the system is planned for the coming years based on a new minicomputer with terminals widely spread through the Department.

The requirement is for a Manager to oversee the developments, to undertake programming for mini and microcomputers and to maintain a prompt and efficient output.

It is envisaged that grading will be increased commensurate with introduction of the new machinery.

The offices are situated in the historic port of Plymouth within easy reach of Dartmoor and the South Devon coastal resorts.

Application and job descriptions can be obtained from Mr A. Wilson, District Treasurer, Plymouth Health Authority, 7 Nelson Gardens, Stoke, Plymouth, (Telephone Plymouth 52855 Ext 247).

The closing date for receipt of completed applications is 23rd May, 1983.

SMR

Sales & Marketing Recruitment Ltd
A Sales and Marketing Recruitment Company

SALES EXECUTIVES

CONSULT THE CAREER DEVELOPMENT SPECIALISTS

When you are dealing with the major factors in your life you can only afford the best, and few things are more important than the development of your career. Certainly, that is how the major computer manufacturers feel about their personnel selection and why such companies as CONTROL DATA, COMPUTER TECHNOLOGY, OATA GENERAL, HONEYWELL, PERKIN ELMER, REOIFFUSION, SPERRY UNIVAC and many others continually use our organisation for the recruitment of experienced sales people. We fully understand the needs of such companies as well as knowing about the many job opportunities that never appear in the press. These well respected names depend on our professional skills and confidentiality. Can you afford less?

Contact: Alan Williams, Peter Hubble
Allister Scott or Roger Gidd - ANY TIME!

LONDON & SOUTH 28 Oxford Street, London W1C 2DE
MIDLANDS & NORTH 20 Grosvenor Street, London W1C 2DE
All other areas please contact your nearest SMR office.

LK

L. K. Metrology Systems Limited

SYSTEMS DESIGN ENGINEER To 12K
We are a young Company with international interests. To accommodate the Company's expansion we require a Systems Design Engineer.

Will advise on the direction of systems development in a quality inspection field, configure for customised applications through liaison with sales personnel and potential customers.

Development areas include: data communication and CAD/CAM systems link-up for automatic P/programming of co-ordinate measuring machines.

Contact the Systems and Marketing Manager, L. K. Metrology Systems Limited, East Midlands Airport, Castle Donington, Derby DE7 2BA.

TEL. DERBY 811349

Andrews & Denton

International Computer & Recruitment Consultants

CONTRACTS

IBM - Analyst/Programmers - CICS
DL1 COBOL
ICL - Programmers - RANGE COBOL
ME29; 2900 VME SCL DUMP-CRACKER
- SWEDEN; Analyst/Programmers -
VMEB IDMS COBOL DRS FORMS experience; Systems Support GEORGE II+.

Contact: TONY DENTON
(day) 0273 721829
(eve) Billingshurst 2049

428 Reynolds Road, London W12 7LH
Employment Agency Licence No. 01104

THE UNIVERSITY OF MANCHESTER

Department of Computer Science

Applications invited for an

INDUSTRY SUPPORTED

RESEARCH ASSISTANTSHIP

In the above named department. The post holder will be responsible for the development of the MUSE portable compilation system: at present the high level languages concerned are Pascal, Fortran, Basic, Cobol, and C, running on VME, PDP11, and MicroVax computer systems. Candidates should have a good degree and relevant systems programming experience in research or industry. The post is tenable for an initial period of three years. Salary range £5,575-£11,150 p.a. (B9/annumundist).

Apply with Curriculum Vitae and names of two referees as soon as possible to Mr S. Phillips, Department of Computer Science, The University, Manchester M13 9PL, (2201).

FOR CLASSIFIED

ADVERTISING USE

DIRECT LINES

RECRUITMENT

CONSULTANCIES

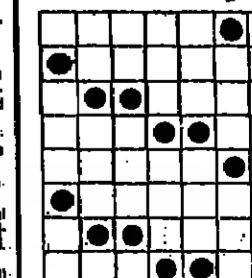
(01) 661 6787

DIRECT ADVERTISERS

(01) 661 8080

PUZZLE ANSWER

A SUITABLE configuration is:



COMPUTER/DDE OPERATOR

Required for ICL 2903/20.

New computer systems are under investigation and therefore experience of Micro/Mini Systems would be desirable.

Salary range: £8,100-£9,700 p.a., depending on appropriate experience in a similar capacity.

Application forms and further details are obtainable from: The Administrative and Personnel Services, The Labour Party, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525